Bankruptcy Profile of Foreign versus Domestic Islamic Banks of Malaysia: A Post Crisis Period Analysis

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ABSTRACT

After the 2007-2008 subprime financial crisis considering bankruptcy evaluation for the banking industry becomes vital. In line of that, this study aims to analyze the bankruptcy profile of foreign versus domestic Islamic banks operating in Malaysia. This study predicted 40% and 75% bankruptcy in the subjected samples of foreign and domestic Islamic banks of Malaysia respectively. However, the specific reason behind this variation in their bankruptcy rates is tagged with the significant difference in their liquidity ratio that is, 1.59 by foreign and 0.41 by the domestic Islamic banks sample. The ANOVA results revealed that, the sample of foreign and domestic Islamic banks of Malaysia do differ significantly on bankruptcy rates as well as on the top bankruptcy's predictors namely liquidity, profitability, and insolvency. However, the sample does not vary on productivity with regards to bankruptcy exposure. Furthermore, the regression results revealed that, liquidity, profitability, and insolvency ratios in the sample of domestic Islamic banks, while only insolvency ratio in the sample of foreign Islamic banks have a significant positive relationship with bankruptcy in Islamic banking industry of Malaysia. Moreover, in the context of identified bankruptcy rates, the analysis here is viable to witness the sustainability ratings possessed by the sample of foreign and domestic Islamic banks of Malaysia.

Keywords: Bankruptcy, Sustainability, Foreign Islamic Banks, Domestic Islamic Banks, Financial Characteristics
JEL Classifications: A10, C01, C12, C33, C50, C53

1. INTRODUCTION

After the subprime crisis, bankruptcy evaluation for the banking industry becomes very important (Laurent Clerc and Mendicino, 2015; Nair et al., 2014), this is because the banking industry holds a pivotal position in a country's economy. And due to the central role of the banking industry, it accounts for the sustainable economic growth and development of the country (Brown, 2003; Hanif et al., 2012; Jeucken and Bouma, 1999; Olson and Zoubi, 2011; Safiullah, 2010). As a result of this intermediate and delicate role associated with the banking industry in the world financial system, if on one hand it is responsible for the achievement of sustainable economic growth and stability of the country. Similarly on the other hand, it is also culpable for any threat or deterioration cause to the country's financial system as a result of inefficient banking performance (Cecchetti, 2015; Iman van Lelyveld, 2006).

The importance of banking industry in the global financial world can also be vestige to the recent past subprime crisis of 2007-

2008. When the topple of gigantic world banks like the, Citigroup New York, Anglo Irish bank and Lehman Brother's investment bank etc. swayed the momentum of the global financial system. Considering this nicety of banking industry, its regular bankruptcy appraisement seems as good as mandatory (Jan and Marimuthu, 2015b; Rashid and Nishat, 2009). In the views of Jan and Marimuthu (2015a) and Swamy (2014) the urge for adopting an efficient sustainable banking model becomes even more important where the domination of banking industry in the economy is very prominent, because the collapse in such case may lead towards an economic crisis inside the area of its reach.

However, instead of an utmost importance for the banking industry to use an efficient bankruptcy evaluation model in order to stay sustainable, yet the bungling of business seems as a common anomaly, with a few organizations coming up short while the others are supplanting them, known as enter and exit phenomena (Chieng, 2013). But the more important thing is to analyze and pinpoint the coming financial distress if any, and take remedial

measures for minimizing its effects on the financial health of businesses (Helmut Elsinger and Summer, 2006). In business terms, this process is known as the early warning systems (EWS) or systematic risk identification (Elsinger et al., 2005). Čihák and Hesse (2010) argued that, instead of being the sheer importance for bankruptcy and sustainability prediction, unfortunately in the case of Islamic banking industry (EWS) has been widely over sighted. Moreover, the literature on Islamic banking with regard to bankruptcy and sustainability is found to be scarce (Jan and Marimuthu, 2015b).

The focus of this study is to address the highly important, but rather neglected area in Islamic banking industry i.e., bankruptcy and sustainability evaluation. However, to bring it a level up, instead of just computing the overall country's bankruptcy evaluation, this study pioneered the concept of comparing the sustainability strategies adopted by foreign and the domestic Islamic banks as well. For that purpose, we choose Malaysian Islamic banking Industry. The reasons for choosing Malaysia Islamic banking industry is because, it is composed of sufficient foreign and domestic Islamic banks. Secondly, in line of its higher bankruptcy rate identified by researchers like Jan and Marimuthu (2015b), this study will help the researchers to understand the share of foreign and domestic Islamic banks in the overall bankruptcy rate.

1.1. Problem Statement

In line with the absolute importance of banking industry in the global financial system Jan and Marimuthu (2015b) carried out a study on the sustainability profile of the top five Islamic banking countries ranked by global banking assets. However, according to the results of the study, Malaysian Islamic banking industry cataloged the highest bankruptcy rate of 89%. The point of discussion here is that, the Malaysian Islamic banking industry is composed of foreign and domestic Islamic banks, and in the context of the higher bankruptcy rate identified by researchers, we do not know whether or not the foreign and domestic Islamic banks of Malaysia are contributing uniformly to overall bankruptcy rate, or they are contributing with different proportion.

1.2. Significance of the Study

Firstly, the testimony of bankruptcy rates for foreign and domestic Islamic banks in Malaysia will lead us towards the illumination of bankruptcy rates of both the sample, on the basis of which we can predict that what is the proportion of foreign and the domestic Islamic banks in the overall bankruptcy rate of Malaysian Islamic banking industry. Secondly, the bankruptcy rates identification may prove help full for the sample with higher bankruptcy rate to inspect the reasons for its failure, and also to consider and ratify the sustainability strategies adopted by the sample with lower bankruptcy rate in order to stay viable.

2. LITERATURE REVIEW

2.1. Islamic Banking Industry in Malaysia

According to Kaleem (2000) domestically in Malaysia the notion of Islamic banking and finance can be vestige to 1969 with the establishment of an Islamic investment and saving institution, known as the Pilgrims Management and Fund Board (Lembaga

Tabung Haji). The enacting of any Islamic financial institutions, and banking services in Malaysia is confined to the Shariah Advisory Council (SAC) administered by the national bank of Malaysia i.e., Bank Negara Malaysia (BNM). According to BNM, collectively 20 Islamic banks are operating in Malaysia out of which 9 are international and foreign owned banks, while the others are domestic. The details of the banks are shown in the Table 1.

2.2. Shariah Supervisory Model in Malaysia

The Shariah governance authority of Malaysia has adopted a pro-active approach, because the proponents have strong faith in a centralised regulatory framework. Therefore, the BNM in 2009 enacted the SAC and it is considered the sole authority to look after all matters in the Islamic banking industry. However, the SAC is enacted to work under the country's central bank (BNM). Therefore, the Shariah supervisory approach adopted by the Islamic banking industry in Malaysia is centralised (NuHtay and Salman, 2013).

2.3. Opportunities for Islamic Banking in Malaysia

Other than the difficulties confronted by Malaysian Islamic banking industry, there lies some opportunities for Islamic banking industry as well. With the possession of third highest Islamic banking assets share worldwide Malaysia is set third on the rundown of worldwide Islamic banking assets (The Banker, KFHR, Bloomberg, Islamic Financial Service Industry Stability Report, 2013. p. 26). Moreover, according to statistics of Horizon (2008) Malaysia got the second highest global Sukuk share of 31%.

Table 2 demonstrates that out of the top Islamic banking countries, Malaysia is the main nation which Compound Annual Growth Rate of assets expanded for the time of 2006-2010, notwithstanding, the increment is exceptionally minor. Other than Malaysia, an obvious decrease in the Compound Annual Growth Rates for the major Islamic banking countries can be seen. The majority of the above focuses demonstrates the quality and predominance

Table 1: Islamic Banks Operating in Malaysia (BNM)

Domestic Islamic Banks	International and Foreign Owned Islamic Banks
Al Rajhi Banking & Investment Co Bhd	PT. Bank Shariah Muamalat Indonesia, Tbk
Public Islamic Bank Berhad	Al-khair International Islamic Bank Berhad
Bank Islam Malaysia Berhad	Al Rajhi Banking & Investment Corporation
Am Islamic Bank Berhad	Deutsche Bank Aktiengesellschaft
RHB Islamic Bank Berhad	Asian Finance Bank Berhad
May Bank Islamic Berhad	HSBC Ammnah Malaysia Berhad
Bank Muamalat Malaysia Berhad	Kuwait Finance House (Malaysia) Berhad
Hong Leong Islamic Bank Berhad	OCBC Al-Amin Bank Berhad
Alliance Islamic Bank Berhad	Standard Chartered Saadiq Berhad
CIMB Islamic Bank Berhad	
Affin Islamic Bank Berhad	

Source: http://www.bnm.gov.my/?ch=li&cat=islamic&type=IB&lang=en, http://www. bnm.gov.my/index.php?ch=li&cat=iib&type=IIB&fund=0&cu. BNM: Bank Negara Malaysia

Table 2: CAGR (assets) of Islamic Banking Industry in Percentage

Country	CAGR (2006-2010)	CAGR (2008-2012)	Decline
Bahrain	22.0	02.0	20.0
Kuwait	22.0	06.0	16.0
Saudi Arabia	19.0	11.0	08.0
Qatar	39.0	31.0	08.0
UAE	16.0	14.0	02.0
Malaysia	19.3	20.0	0.07*

Source: World Islamic bank competitiveness report year 2011/2012 and 2013/2014. Jan, A., Marimuthu, M. (2015). Sustainability profile of islamic banking industry: Evidence from World top five Islamic banking countries. International Journal of Economics and Finance, 7 (5), 125. CAGR: Compound Annual Growth Rate. * Increase in CAGR (2006-2012)

of Malaysian Islamic banking industry. On the other hand, the significant opportunity for the advancement of Islamic banking industry of Malaysia exists within these qualities.

2.4. Challenges for Islamic Banking in Malaysia

The significant difficulties in regards to Islamic banking in Malaysia are profoundly connected with the un-legality of Islamic principles in some of the offered Islamic banking products in Malaysia. Haron (2004) speculated that due to the discrepancy of Shariah board guidelines in offered products, the Islamic banking industry is not fully embraced by the Muslims. However, Samad and Hassan (1999) distinguished the inadequacy of skilled and educated workers appointed by Islamic banks as the real explanation behind not grasping Islamic products in Malaysia. In addition, Islamic banking experts in Malaysia are utilizing a few ideas which are considered lawful as per the Malaysia Shariah board, however are seen in contrast with the Sharia standards in the other Islamic banking nations, such as the concepts of, Bay-al-Dayn and Dawa-to-Ajjal, etc. and numerous Middle Eastern Islamic scholars are contradicting with the researchers in Malaysia about the ramifications of these standards (Haron, 2000).

As indicated by Chong and Liu (2009) Islamic banking is considered as a profit and loss sharing (PLS) business in principle. However, in all actuality there is no distinction between the PLS criteria in the Islamic banking industry with the PLS criteria set by conventional banks in Malaysia. Also, the development of Islamic banking in Malaysia did not happen because of its ostensible criteria of PLS, but the development happened because of the Islamic banking resurgence around the world (Chong and Liu, 2009).

The significant challenges lie for Islamic banking industry in Malaysia is its most astounding bankruptcy rate. As indicated by the study completed by Jan and Marimuthu (2015b) in line with the sustainability profile of the main five Islamic banking countries ranked by global banking assets concluded that, the bankruptcy rate of Malaysian Islamic banking industry discovered to be most noteworthy in the tested sample i.e., with 89% bankruptcy rate. Considering such a high bankruptcy rate, it is a major challenge for the Malaysian Islamic banking industry to come back to the track.

2.5. Performance Indicators Used for Measuring Foreign versus Domestic Islamic Banks Performance

Different performance indicators are utilized as a part of measuring the financial performance of foreign versus local Islamic banks.

Inline to that Muda et al. (2013) analyzed the performance of local versus foreign Islamic banks in Malaysia utilizing different performance indicators. The study found that foreign Islamic banks were more profitable, and a reasonable distinction between domestic and foreign Islamic bank profitability determinants was noticed. However, the study additionally inferred that the profitability of the local Islamic banks was influenced by the worldwide financial crisis. In contrast, the profitability of foreign Islamic banks did not influenced by the financial crisis.

Sufian (2007) measured the proficiency of the foreign and domestic Islamic banks in Malaysia utilizing Drug Enforcement Administration procedures. The study recommended that the performance of Islamic banking in Malaysia declined in the year 2002. However, a slight increase was seen in the years 2003 and 2004. Besides, the study reported that local Islamic banks were more effective contrasted with foreign Islamic banks.

Bashir (2003) concentrated on the profit and productivity of 14 Islamic banks from eight Middle Eastern nations by utilizing distinctive performance indicators. The specimen involved foreign and domestic Islamic banks. On the other hand, the performance indicators utilized as a part of the study contained banks specific variables, macro-economic variables, and structural variables. Additionally, the study recommended that the high loan to asset ratio and high leverage ratios lead to higher profitability. Moreover, the study reported that the foreign Islamic banks were more profitable than those of the domestic Islamic banks in the selected sample.

3. OBJECTIVES OF THE STUDY

- To examine the bankruptcy rates of foreign and domestic Islamic banks operating in Malaysia
- To perform a comparative analysis among foreign and domestic Islamic banks of Malaysia on the top bankruptcy predictors
- To examine the impact of an individual performance indicator with bankruptcy in the Islamic banking industry of Malaysia.

4. METHODOLOGY

4.1. Selection of Bankruptcy Model

According to Kumar and Ravi (2007) the area of bankruptcy forecasting has been widely considered and turned into the area of pursuit for many researchers since 1960's. In line with that Beaver (1966) completed the most punctual work done in the field of bankruptcy by building up a univariate bankruptcy model with the assistance of distinctive financial ratios. However, on the premise of its univariate nature i.e., forecast of only one variable at time, the model faced a lot of criticism. Altman (1968) postmarked the criticism made on earlier Beaver's model by establishing a new Z-score bankruptcy model utilizing multivariate procedure surprisingly. Altman's model opened new aspects in the field of bankruptcy and in this manner the Z-score model turned out to be exceptionally well known in bankruptcy literature because of its most noteworthy precision level i.e., 94% accuracy level.

Deakin (1972) additionally criticized the univariate nature of prior Beaver's model and revamp his model in multivariate perspective for accomplishing higher accuracy. Altman et al. (1977) established new bankruptcy model called the zeta-model, in that new zeta-model the study presented some new variables for discovering financial distress. Ohlson (1980) presented another idea in bankruptcy literature by pioneering logistic regression and built up another bankruptcy model, however the model experienced a lot of criticism on the premise of its complication. Mossman et al. (1998) compared the top accessible bankruptcy models and appraised Altman model as the best indicator for bankruptcy because of its highest accuracy and ratio built nature, as the ratios are the best indicators in discovering bankruptcy (Altman, 1968; Chieng, 2013; Mossman et al., 1998; Pompe and Bilderbeek, 2005). Also, because of the precision and prevalence of Altman bankruptcy model (Altman, 2000) tended to all the criticism made on earlier bankruptcy models particularly on Altman (1968) and Altman et al. (1977) and reexamined both the earliest models as per need of time, the new models are talked about as under.

Total of three equations are utilized as a part of Altman's bankruptcy model as demonstrated in the Table 3. For manufacturing firms the formula is partitioned into two sets i.e., public and private. While foreseeing the bankruptcy of service industry like the banking industry, Altman presented a separate service firm model (Altman, 2000).

4.2. Altman Model for Service Firms
Altman model is a linear model accredited out with distinctive weights. The model is being utilized by different researchers over the duration of time. Georgios (2012) utilized Altman model on Greek banking industry and discovered the model extremely exact in discovering bankruptcy. Chieng (2013) tested Altman model on Euro zone banks and reported the model 100% precise in discovering bankruptcy. Sharma (2013) utilized Altman model on Indian banking industry and reported the exactness of the model with 70%. Mamo (2011) exercised Altman model on Kenyan banking industry and reported the model 90% precise in general.

4.3. Areas of Discrimination for Altman Service Firm Model

$$Z = 6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$$

As indicated by Altman (2000) if the estimation of Z-score discovered more than 2.90 the firm will be evaluated in the safe zone, if the estimation of Z-score discovered under 1.21 the firm will be placed in bankruptcy zone. However, if the estimation of Z-score lied in the middle of $1.21 < Z < 2.9$ the firm is said to be

Table 3: Available formulas in Altman models

If public firm	$Z=1.2X1 + 1.4X2 + 3.3X3 + 0.6X4 + 0.999X5$
If private firm	$Z=0.717X1 + 0.847X2 + 3.107X3 + 0.420X4 + 0.998X5$
If service firm	$Z=6.56X1 + 3.26X2 + 6.72X3 + 1.05X4$

Source: Altman, E.I. (2000). Predicting financial distress of companies: Revisiting the Z-score and zeta models. Journal of Banking & Finance

in the grey zone, in fact grey zone is technically called the safe zone but with high alert.

4.4. Explanatory Variables
Z-score = Z-score is the dependent variable which is utilized to indicate bankruptcy. Higher the Z-score more secure is the bank and the other way around.

There are four independent variables in Altman model of service firm's i.e.,

X1 = Working Capital/Total Assets

This proportion measures the liquidity of the organizations. As liquidity is the most essential viewpoint in discovering bankruptcy.

X2 = Retained Earnings/Total Assets

This proportion measures the aggregate profitability of the organizations.

X3 = Earnings before Interest and Taxes/Total Assets

This proportion measures the aggregate productivity of the organizations that how gainful the association's assets are.

X4 = Book Value of Equity/Book Value of Total Liabilities

This proportion is in charge of measuring the indebtedness of the firm. Higher the proportion most secure is the firm and *viz*.

In line with evaluating the bankruptcy profile of foreign and domestic Islamic banks of Malaysia, the Figure 1 shows the conceptual frame work of this study. We applied Altman's bankruptcy model on the sample of foreign and domestic Islamic banks, and if the bank is found bankrupt, it means that it has weak economic sustainability. On the other hand, if the bank is to found non-bankrupt, it means that it has strong economic sustainability.

4.5. Hypotheses Development
4.5.1. Hypothesis one
The first objective of the study is to look at the bankruptcy rates of foreign and domestic Islamic banks working in Malaysia.

Figure 1: Conceptual frame work of Altman's model for service firm
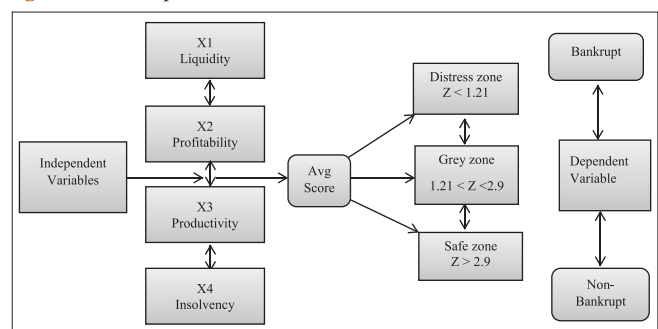
Source: Jan, A., Marimuthu, M. (2015). Bankruptcy and sustainability: A conceptual review on Islamic banking industry. Global Business and Management Research: An International Journal, 7(1), 109-138

Then again, inline of the studies like Jan and Marimuthu (2015), which recognized the most elevated bankruptcy rate in Malaysian Islamic banking industry, this study will permit us to comprehend the truth that, regardless of whether the foreign and domestic Islamic banks of Malaysia are just as equally bankrupt, or they vary on bankruptcy rates. So, we can anticipate the share of domestic and foreign Islamic banks in the general bankruptcy rate of Malaysian Islamic banking separately. Therefore, the accompanying hypothesis is created.

H_0: Foreign and domestic Islamic banks of Malaysia do not differ on bankruptcy rates.

H_1: Foreign and domestic Islamic banks of Malaysia do differ on bankruptcy rates.

4.5.2. Hypothesis two
The second objective of the study is to perform a comparative analysis among foreign and domestic Islamic banks of Malaysia on the top bankruptcy predictors. Altman (2000) contended that liquidity, profitability, productivity, and insolvency are the top performance indicators for measuring bankruptcy of the service firms. Consequently, this study will lead us to comprehend the way that, regardless of whether the foreign and domestic Islamic banks of Malaysia vary on the top bankruptcy indicators with respect to bankruptcy exposures. And accordingly, the accompanying hypotheses are proposed.

H_0: Foreign and domestic Islamic banks of Malaysia do not differ on performance indicators with regards to bankruptcy exposures.

H_1: Foreign and domestic Islamic banks of Malaysia do differ on performance indicators with regards to bankruptcy exposures.

H_{1a}: Foreign Islamic banks of Malaysia do differ on liquidity with regards to bankruptcy exposures.

H_{1b}: Foreign Islamic banks of Malaysia do differ on profitability with regards to bankruptcy exposures.

H_{1c}: Foreign Islamic banks of Malaysia do differ on productivity with regards to bankruptcy exposures.

H_{1d}: Foreign Islamic banks of Malaysia do differ on insolvency with regards to bankruptcy exposures.

H_{1e}: Domestic Islamic banks of Malaysia do differ on liquidity with regards to bankruptcy exposures.

H_{1f}: Domestic Islamic banks of Malaysia do differ on profitability with regards to bankruptcy exposures.

H_{1g}: Domestic Islamic banks of Malaysia do differ on productivity with regards to bankruptcy exposures.

H_{1h}: Domestic Islamic banks of Malaysia do differ on insolvency with regards to bankruptcy exposure.

4.5.3. Hypothesis three
The third objective is to examine the impact of an individual performance indicator with bankruptcy in Islamic banking industry. Altman (2000) model argues that the four performance indicators namely liquidity, profitability, productivity, and insolvency are the four top variables that measures bankruptcy. Hence, it would be interesting to see the effect of these four variables in Islamic banking context. Therefore, the following hypothesis are developed.

H_0: Performance indicators do not have a positive significant impact on bankruptcy profile of the Islamic banking industry.

H_1: Performance indicators do have a significant positive impact on bankruptcy profile of the Islamic banking industry.

H_{1a}: Liquidity does have a significant positive impact on bankruptcy profile of the Islamic banking industry.

H_{1b}: Profitability does have a significant positive impact on bankruptcy profile of the Islamic banking industry.

H_{1c}: Productivity does have a significant positive impact on bankruptcy profile of the Islamic banking industry.

H_{1d}: Insolvency does have a significant positive impact on bankruptcy profile of the Islamic banking industry.

4.6. Data Collection
This study is based on secondary data, all the obliged information is taken from the yearly report of delegate banks. The official websites for downloading the obliged yearly reports 2009-2013 is followed by means of http://wiki.islamicfinance.de/index.php/Islamic_financial_institutions.

Table 4 demonstrates the list of foreign and domestic Islamic banks of Malaysia chosen for this study. For instance, four foreign and four domestic Islamic banks are taken on the premise of convenient sampling, and considering accessibility of annual reports.

4.7. Conceptual Frame Work of the Study (Figure 2)
This study used and proposed bankruptcy as a proxy for measuring economic sustainability of the Islamic banking industry. The detailed conceptual framework of the study is depicted in Figure 2.

Table 4: Selected Islamic Banks from Malaysia

Sample of banks	Starting date
Domestic Islamic banks	
Alliance Islamic bank	2008
CIMB bank	2008
Hong Leong Islamic	2008
Public Islamic bank	2007
Foreign Islamic banks	
HSBC Ammnah	2007
KFH Malaysia Berhad	2005
OCBC Al-Amin	2003
Asian Finance Bank	1994

5. RESULTS AND DISCUSSION

5.1. Data Normality Tests

The results of data normality tests in Appendix Table 2 demonstrates that our data is normally distributed. As the significance values of all the banks in both the samples are found <0.05, which implies that our chosen data is normally distributed. Moreover, the graphical representations of data normality using histograms for both the sample of this study are also shown in Appendix Figure 1, and Appendix Figure 2 respectively.

Table 5 demonstrates Z-score results 2009-2013 for all the selected foreign and domestic Islamic banks of Malaysia. The calculation of Z-score for all the selcted banks is shown in the Appendix Table 1. Firstly, yearly Z-scores was calculated i.e., 2009-2013, and afterward a 5 years Z-score was taken. The zones i.e., safe, grey, and bankrupt are figured on 5 years average Z-score values. However, as indicated by Altman's (2000) service firms model zone of discrimination which contends that, if the estimation of Z-score is discovered higher than 2.90 the banks is in the safe zone, if the Z-score value discovered under 1.21 the bank is in the bankruptcy zone. Then again, if the estimation of Z-score found in between 1.21 and 2.90 the bank is said to be in the grey zone. In addition, the grey zone is in-fact considered in the safe zone but with higher alert.

In the Table 5 two foreign Islamic banks of Malaysia were found in the grey zone, one in the bankruptcy zone and only one in the safe zone namely Asian Finance Bank. On the other hand, three domestic Islamic banks of Malaysia were found in the bankruptcy zone one in the safe zone to be specific CIMB Bank. However, from the sample no domestic Islamic bank of Malaysia found in the grey zone. Later on, the positioning to an individual banks is allotted on the premise of most noteworthy Z-score. CIMB Islamic banks beat the sustainability profile list with the most noteworthy normal Z-score i.e., 3.97, opposite, Public Islamic Bank from domestic Islamic banks catalogued last position on the sustainability list. Considering the sustainability profile, the sample of foreign Islamic banks of Malaysia performed superior than the sample of domestic Islamic banks as it recorded the 2nd, 3rd, and 4th, place separately.

Table 6 demonstrates bankruptcy rates 2009-2013 for the sample of foreign, domestic and the combine sample of Islamic banks. The yearly bankruptcy rate for representative sample was calculated considering the yearly values of each zone i.e., safe zone, bankruptcy zone and the grey zone. For instance, if we examine the Z-scores value of foreign Islamic banks for the year 2009 in the Table 5 which demonstrates diverse Z-scores for foreign Islamic banks in year 2009 i.e., 0.82, 1.83, 1.58, 3.16. However, In light of Altman's model zone of discrimination the Z-score value for one bank in the above mentioned values is discovered <1.21 i.e., 0.82 therefore, it is set in the bankruptcy zone. In this manner, the proportion of foreign Islamic banks in bankruptcy zone for the year 2009 turned into 25% i.e., 1/4*100. Likewise, considering the above information two banks are found in the grey zone i.e., 1.83 and 1.58, hence, the proportion of foreign Islamic banks in grey zone for the year 2009 turned into 50% i.e., 2/4*100. In view of one bank found in the safe zone with its Z-score more than 2.90 i.e., 3.16, the proportion of foreign Islamic banks in the safe zone for the year 2009 turned into 25% i.e., 1/4*100. Following the same system the bankruptcy rate 2009-2013 is ascertained for every individual zone inside the sample of foreign and domestic Islamic banks of Malaysia.

Considering results of the Table 6, the rate of the foreign Islamic banking was found at 40% in the bankruptcy zone, 40% in the grey zone and just 20% in the safe zone. On the other hand, the rate of the domestic Islamic bank was found at 75 in bankrupt zone, 00% in the grey zone and just 25% in the safe zone. In fact, the grey zone fall inside the safe zone, yet with high alarm. However, in line of the outcomes it is anticipated that, the sample of foreign Islamic banks of Malaysia is not so much bankrupt but rather more sustainable, on the other hand, the chosen sample of domestic Islamic banks of Malaysia is observed to be more bankrupt and less sustainable. Also, the general bankruptcy rate for the chosen sample of Malaysia Islamic banks was discovered high i.e., 58%.

Figure 2: Conceptual frame work of the study
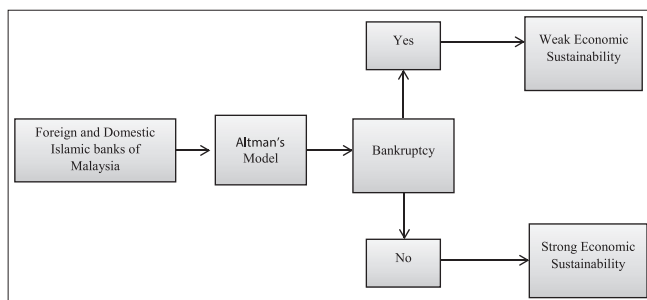
Table 5: Z-score results of all the selected banks

Bank name	2009	2010	2011	2012	2013	Average	Zone	Ranking
Sample of Foreign Islamic Banks								
HSBC Ammnah	0.82	0.96	0.53	0.80	0.82	0.79	Distress	06th
KFH Malaysia Berhad	1.83	1.24	1.03	0.67	1.26	1.21	Grey	04th
OCBC Al-Amin	1.58	2.23	1.36	2.29	2.25	1.94	Grey	03rd
Asian Finance bank	3.16	3.21	3.74	2.84	3.23	3.24	Safe	02nd
Yearly average	1.84	1.91	1.66	1.65	1.89	1.79	Grey	00
Sample of Domestic Islamic Banks								
Alliance Islamic bank	0.93	0.87	0.76	0.69	0.65	0.78	Distress	07th
CIMB Bank	4.91	4.64	3.59	3.19	3.53	3.97	Safe	01st
Hong Leong Islamic	0.95	1.04	0.70	0.66	0.65	0.80	Distress	05th
Public Islamic bank	0.61	0.72	0.55	0.62	0.53	0.61	Distress	08th
Yearly Average	1.85	1.81	1.44	1.29	1.34	1.54	Grey	00

The first objective of the study was to examine the bankruptcy rates of foreign and domestic Islamic banks working in Malaysia. For this reason different bankruptcy rates were first computed as shown in the Table 6. However, the Table 7 is demonstrating the result of ANOVA *post-hoc* Scheffe test in accordance with the hypothesis number one which expresses that:

- H_0: Foreign and domestic Islamic banks of Malaysia do not differ on bankruptcy rates.
- H_1: Foreign and domestic Islamic banks of Malaysia do differ on bankruptcy rates.

The Table 7 shows the P value of bankruptcy zone is exceptionally noteworthy at, i.e., P = 0.000. Therefore, the alternative hypothesis of the study is supported, and it implies that, the foreign and domestic Islamic banks of Malaysia do differ on bankruptcy rates. Also, the results of *post-hoc* Scheffe test is demonstrating that, which sample is differentiating to which sample, on which zone and on what significance rate. For instance, the results of *post-hoc* Scheffe test concerning the bankruptcy zone demonstrates that, the foreign and domestic Islamic banks of Malaysia differ on bankruptcy zone, i.e., P = 0.000. The P value of 0.027 shows that foreign and overall sample also differ on bankrupt zone. Moreover, the P value of 0.032 also signifies that the domestic and the overall sample also differ on bankrupty zone. On grey zone the sample of foreign and domestic Islamic banks do differs, i.e., P = 0.000. The P value of 0.013 alluded that, Foreign and the overall sample do differ on grey zone. Furthermore, the P value of 0.014 signifies that the domestic and the overall sample also differ on the grey zone. The relationship of foreign, domestic and the overall sample of Islamic banks of Malaysia discovered insignificant on the safe zone, due to its insignificant P values.

Table 8 demonstrates the 5 years 2009-2013 average values of all the performance indicators which are used in Altman model for evaluating bankruptcy. In short, the results of Altman bankruptcy model are dependent on the values of all the performance indictors namely liquidity, profitability, productivity, and insolvency. The main reason for the difference between the bankruptcy rates of domestic Islamic banks i.e., 75% and that of foreign Islamic banks with 40% is because of the difference in both countries liquidity. As the Table 8 clearly demonstrates that the foreign Islamic banks of Malaysia are more liquid than that of domestic Islamic banks. This high liquidity factor ultimately became the reason for low bankruptcy, and high sustainability for foreign Islamic banks as compared to the sample of domestic Islamic banks of Malaysia in the overall calculation process of Altman's model. Furthermore, the results also revealed that, domestic Islamic banks are more productive and more profitable, but its impact has been surpass by the higher liquidity of foreign Islamic banks in the overall calculation process of the model.

Table 9 demonstrates the comparative Analysis of foreign and domestic Islamic banks with regards to bankruptcy exposures. In line with the second objective of the study i.e., to perform a comparative analysis among foreign and domestic Islamic banks of Malaysia on the top bankruptcy predictors, this study applied ANOVA test. On the other hand, Altman (2000) contended that liquidity, profitability, productivity, and insolvency are the top performance indicators for measuring bankruptcy of the service firms. Subsequently, this comparative investigation for foreign Islamic banks sample on the top bankruptcy indicators demonstrates that, the P value for liquidity, profitability, and insolvency ratios were found exceptionally noteworthy at 1%, i.e., P values 0.000, 0.010, and 0.000 respectively. However, the value of productivity ratio was found insignificant in the sample of foreign Islamic banks. This implies that the sample of foreign Islamic banks do differ on these bankruptcy predictors. Therefore, the alternative hypotheses of the study are supported i.e.

H_{1a}: Foreign Islamic banks of Malaysia do differ on liquidity with regards to bankruptcy exposures.

H_{1b}: Foreign Islamic banks of Malaysia do differ on profitability with regards to bankruptcy exposures.

H_{1d}: Foreign Islamic banks of Malaysia do differ on insolvency with regards to bankruptcy exposures.

On the other hand, the comparative investigation of domestic Islamic banks on the top bankruptcy indicators demonstrates that, all the performance indicators in particular, liquidity, profitability, productivity, and insolvency do differ on these indicators with regards to exposures, because the P values for all these ratios were found significant at 1% i.e. (P = 0.000). And hence the alternative hypotheses are supported with argued that:

H_{1e}: Domestic Islamic banks of Malaysia do differ on liquidity with regards to bankruptcy exposures.

H_{1f}: Domestic Islamic banks of Malaysia do differ on profitability with regards to bankruptcy exposures.

H_{1g}: Domestic Islamic banks of Malaysia do differ on productivity with regards to bankruptcy exposures.

Table 6: Performance zone of foreign versus domestic Islamic Banks of Malaysia

Bankruptcy rates	2009	2010	2011	2012	2013	AVG
Foreign Islamic Banks						
Bankruptcy zone	25	25	50	50	50	40
Grey zone	50	50	25	50	25	40
Safe zone	25	25	25	00	25	20
Domestic Islamic Banks						
Bankruptcy zone	75	75	75	75	75	75
Grey zone	00	00	00	00	00	00
Safe zone	25	25	25	25	25	25
Overall Bankruptcy						
Bankruptcy zone	50	50	63	63	63	58
Grey zone	25	25	12	25	12	20
Safe zone	25	25	25	12	25	22

Table 7: ANOVA results

ANOVA	Bankruptcy zone	Grey zone	Safe zone
P value	0.000***	0.000***	0.569
F value	19.28	25.19	0.569
Post-hoc Scheffe test			
Foreign - Domestic	0.000***	0.000***	0.569
Foreign - Overall	0.027**	0.013***	0.874
Domestic - Overall	0.032**	0.014**	0.854

**Significant at 5%, and ***Significant at 1%

Table 8: Specific reasons for difference in bankruptcy rates

Banks	Average liquidity	Average profitability	Average productivity	Average insolvency	Z-score
Domestic Islamic Banks					
Alliance Islamic Bank	0.54	0.04	0.10	0.10	0.78
CIMB Bank	0.14	0.28	0.59	2.97	3.98
Hong Leong Islamic	0.61	0.04	0.07	0.08	0.81
Public Islamic Bank	0.37	0.03	0.13	0.08	0.61
Average ratio	0.41	0.09	0.22	0.80	1.54
Foreign Islamic Banks					
HSBC Ammnah	0.53	0.06	0.08	0.12	0.79
KFH Malaysia Berhad	0.96	−0.12	0.11	0.22	1.17
OCBC Al-Amin	1.79	0.03	0.05	0.07	1.94
Asian Finance Bank	3.10	−0.06	−0.02	0.22	3.24
Average ratio	1.59	−0.02	0.05	0.15	1.79

Table 9: Comparative analysis on top bankruptcy predictors

Particular	Foreign Islamic Banks		Domestic Islamic Banks	
ANOVA test	P value	F value	P value	F value
Liquidity	0.000***	59.36	0.000***	14.34
Profitability	0.010***	5.269	0.000***	26.56
Productivity	0.32	1.264	0.000***	45.44
Insolvency	0.000***	34.53	0.000***	92.66

**Significant at 5%, and ***Significant at 1%

H_{1h}: Domestic Islamic banks of Malaysia do differ on insolvency with regards to bankruptcy exposures.

Table 10 shows correlation results for the sample of foreign and domestic Islamic banks of Malaysia. From the sample of domestic Islamic banks the P values of variables profitability and insolvency ratios are found significant with 5% and 1% respectively. Moreover, the values of their coefficients are also positive with 0.501 and 0.699 respectively. This means that these variables have a medium positive correlation with Z-score which represents bankruptcy. On the other hand, from the sample of foreign Islamic banks the P values of variables liquidity and productively ratios are found significant with 1% and 10% respectively. However, considering their coefficient values, the profitability ratio got a positive significant, while productivity ratio got a weak negative correlation with dependent variable Z-score.

5.1.1. Overall statistics

The third objective of the study was to examine the impact of an individual performance indicator on bankruptcy profile of the Islamic banking industry. In line of that, the Table 11 shows the regression results for the sample of foreign and domestic Islamic banks. The overall statistic shows that the R^2 for the sample of domestic Islamic banks is 0.69, while for foreign Islamic banks of Malaysia is 0.40 respectively. In consonant to R^2 the error term for the sample of foreign Islamic banks is 0.31, and that of domestic Islamic banks is 0.60 respectively. The dependent variables in this study is Z-score which represents bankruptcy. However, according to Altman Z-score interpretation higher is the Z-score lower will be the chances of bankruptcy and *viz*. For explaining the expected unit change in the dependent variable (Z-score) this study used the unstandardized coefficient, because the data scale used in this study i.e., ratio is well known in daily use. While on the other hand, the standardised coefficients are used when a study sets a unique scale for data which is not commonly used, moreover, the standardised coefficients shows the variation in standatd deviation instead of units. The T-values shows the confidence level and the significance of an individual variable in the model. Furthermore, the results of VIF confirms no signs of multicollinearity in the model, as the VIF values for all the independent variables in foreign as well as domestic Islamic banks samples are found less than the default thresh hold for multicollinearity i.e., 10.

5.1.2. Regression results for domestic Islamic banks
• Regression model

$$Z = -2.263 + 4.633_{Liquidity} + 7.280_{Profitability} + 2.785_{Productivity} + 0.469_{Insolvency} + 0.31_{\Sigma T}$$

From the sample of domestic Islamic banks of Malaysia the P value of liquidity ratio was found significant at 1% i.e. (P = 0.014), the profitability ratio was found significant at 1% i.e. (P = 0.016), and the insolvency ratio was also found signifact at 10% i.e. (P = 0.081). Moreover, the values of their unstandardized coefficient were also found positive with values 4.633, 7.280 and 0.469 respectively. This means that these variables have a significant positive relation with (Z-score) which represents bankruptcy. As higher Z-score represents lower, while lower Z-score represents higher bankruptcy. In line of that, a unit increase in liquidity, profitability, and insolvency ratios will increase the values of Z-score with 4.633, 7.280, and 2.785 units positively. Hence, in this case the alternative hypotheses of the study are supported. Which argued that, liquidity, profitability, and insolvency ratios have a significant positive relationship with bankruptcy in Islamic banking industry of Malaysia. While the performance indicator productivity has an insignificant relation, therefore, the null hypothesis in this case is supported.

5.1.3. Regression results for foreign islamic banks
• Regression model

$$Z = 0.458 + 0.957_{Liquidity} + 0.863_{Profitability} + 0.224_{Productivity} - 1.721_{Insolvency} + 0.60_{\Sigma T}$$

From the sample of foreign Islamic banks of Malaysia the P value of only liquidity ratio was found significant at 1% i.e. (P = 0.000). The value of its unstandardized coefficient was also found positive with the value of 0.975. This means that, liquidity has a significant positive relation with (Z-score) which represents bankruptcy. In

Table 10: Correlation matrix

Variables	Particulars									
	Domestic Islamic Bank					Foreign Islamic Banks				
	Z-score	Liquidity	Profitability	Productivity	Insolvency	Z-score	Liquidity	Profitability	Productivity	Insolvency
Z-score (bankruptcy)	(1)					(1)	0.960***	−0.158	−0.528*	0.007
Liquidity	−0.054	(1)					(1)	−0.284	−0.610**	0.081
Profitability	0.501**	−0.556*	(1)					(1)	0.450*	−0.619**
Productivity	0.358	−0.709***	0.309	(1)					(1)	−0.385*
Insolvency	0.699***	−0.367	0.490**	0.624***	(1)					(1)

***Significant at 1%, **significant at 5%, *significant at 10%. r=±0.5-0.8 in between (medium correlation), r=±0.8 or higher (strong correlation), r=±0.4 or lower (weak correlation)

Table 11: Regression results

Variables	Domestic Islamic Banks				Foreign Islamic Banks			
Z-score	Coefficient	T value	P	VIF	Coefficient	T value	P	VIF
Constant	−2.26	−1.984*	0.066	3.298	0.458	1.033	0.318	1.708
Liquidity	4.633	2.774***	0.014	2.117	0.957	7.191***	0.000	1.814
Profitability	7.280	2.707***	0.016	3.664	0.863	0.732	0.475	1.983
Productivity	2.785	1.593	0.132	2.385	0.224	0.181	0.859	1.777
Insolvency	0.469	1.871*	0.081	3.298	−1.72	−0.922	0.371	1.708
R^2			0.69				0.40	

***Significant at 1%, *significant at 10%

line of that, a unit increase in liquidity ratio will increase the values of Z-score with 0.975 units positevly. However, the higher Z-score represents lower, while lower Z-score represents higher bankruptcy hence, in this case the alternative hypothesis of the study is supported. Which argued that, liquidity ratio has a significant positive relationship with bankruptcy in Islamic banking industry of Malaysia. Moreover, profitability, productivity, and insolvency ratios are found to have insignificant relation. And therefore, the null hypothesis in their cases are supported.

6. CONCLUSION

For saturating the first objective of the study i.e., is to examine the bankruptcy rate of foreign and domestic Islamic banks of Malaysia, this study categorised the financial performance of Islamic banks into three zones i.e., the safe zone, the grey zone and the bankruptcy zone) using Altman model. The sample of foreign Islamic banks found 40% in the bankruptcy zone, 40% in the grey zone and just 20% in the safe zone. On the other hand, the sample of domestic Islamic banking found 75% in the bankruptcy zone, 00% in the grey zone and just 25% in the safe zone. The ANOVA results uncovered that, the foreign and domestic Islamic banks of Malaysia do differ on bankruptcy zone and grey zones. However, the sample of foreign and domestic Islamic banks of Malaysia do not differ on the financial characteristics of the safe zone. In the line of identified bankruptcy rates i.e., 75% by domestic and 40% by the sample of foreign Islamic bank, it is anticipated that the sample of foreign Islamic banks of Malaysia is more sustainable. While the sample of domestic Islamic banks is accounted for to be more bankrupt and less sustainable. This study found out that, the higher 5 years average liquidity by foreign Islamic banks i.e., 1.59, compared to the lower average liquidity ratio i.e., 0.41 by domestic Islamic banks to be the specific factor behind the lower bankruptcy rates i.e. 40% by foreign Islamic banks, and the highest bankruptcy rate i.e., 75% by domestic Islamic banks sample

respectively. These findings are consistent with the findings of Marin (2013), Nance et al. (1993) which argued that more liquid firms have low changes of default as compared to less liquid firms.

The above findings are in contrast with the finding of Sufian (2007) which contended that domestic Islamic banks of Malaysia are efficient than foreign Islamic banks, however the findings are inline and supporting the past finding by Muda et al. (2013) which said that the performnace of foreign Islamic banks of Malaysia are better than domestic Islamic banks. In addition, the findings of this study may be help full for the practitioners of domestic Islamic banks in Malaysia to take remedial measures for minimising its higher bankruptcy rate of 75%. Whatsoever, the foreign and domestic Islamic banks of Malaysia needs to eliminate or reduce this mismatch between the cross-border banks performnace, because the financial performance mismatch between the cross-border banking is detrimental for smooth running of the country's financial system (Degryse and Nguyen, 2007).

According to the second objective of the study i.e., to perform a comparative analysis among foreign and domestic Islamic banks of Malaysia on the top bankruptcy predictors, the results uncovered that, the sample of foreign and domestic Islamic banks do differ on bankruptcy predictors namely liquidity, profitability, and insolvency. While on productivity the sample of foreign Islamic banks does not vary. On the other hand, the sample of domestic Islamic banks do vary on all the main four bankruptcy indicators recognized by Altman (2000) namely liquidity, profitability, productivity, and insolvency. These discovering may help the researchers and professionals to comprehend the impact and result of all the main four bankruptcy indicators in term of foreign and domestic Islamic banks in point of interest, however, this process may also leads into the development of a separate bankruptcy and sustainability diagnosing model for domestic as well as the foreign Islamic banks of Malaysia.

In consonant with the third objective which is to examine the impact of an individual performance indicators in Islamic banking industry of Malaysia the regression results demonstrated that, liquidity, profitability, and insolvency have a significant positive relationship with bankruptcy of domestic Islamic banks of Malaysia. While productivity ratio is found to have an insignificant relation with bankruptcy in domestic Islamic banks of Malaysia. On the other hand, the regression result for the sample of foreign Islamic banks of Malaysia revealed that, only liquidity ratios have a significant positive relationship with bankruptcy profile of foreign Islamic banks of Malaysia, while performance indicators profitability, productivity, and insolvency ratios are found to have an insignificant relationship with bankruptcy profile of the sample of foreign Islamic banks of Malaysia.

6.1. Suggestion for Further Study

As this study analysed the bankruptcy profile of foreign and domestic Islamic banks in Malaysia for the period 2009-2013. However, the tested period is considered as the post subprime crisis period, and according to the practitioners of Islamic banking industry, the post subprime crisis period is considered to be the transformational or recovery period from the crisis effects. However, to testify that claim it would be rather interesting to compare the bankruptcy profile of foreign and domestic Islamic banks of Malaysia for the pre and post subprime crisis period i.e., 2003-2008 and 2009-2013.

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APPENDIX

Appendix Figure 1: Domestic Islamic Banks Sample (data normality curves)
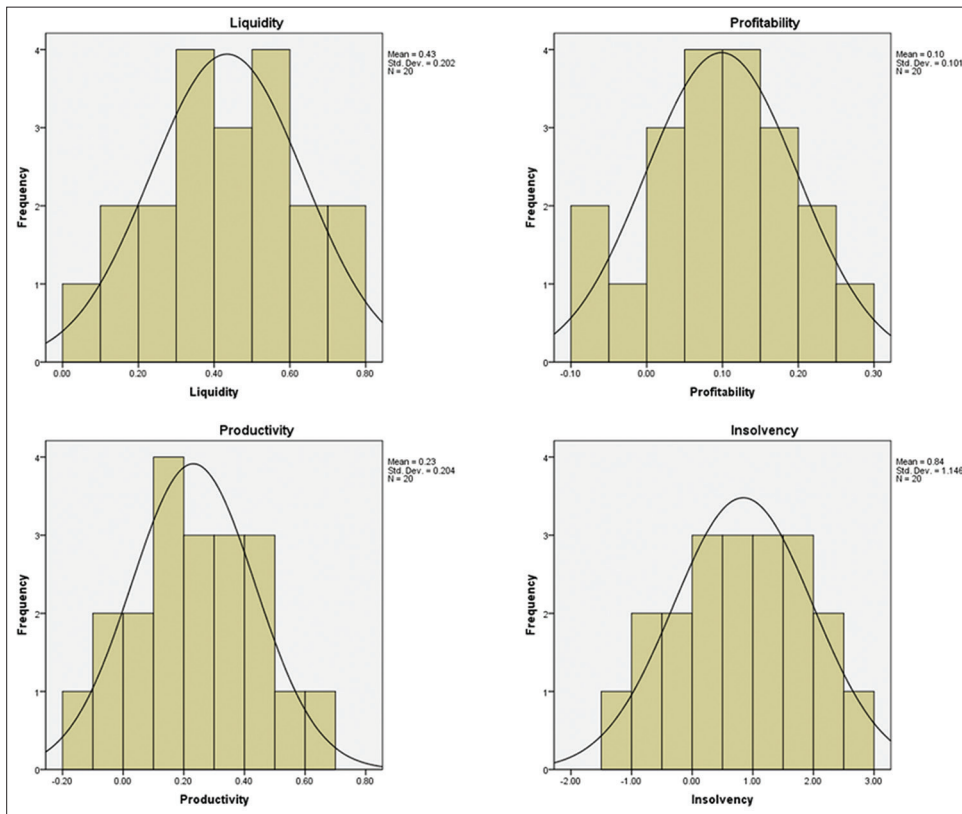
Appendix Figure 2: Foreign Islamic Banks Sample (data normality curves)
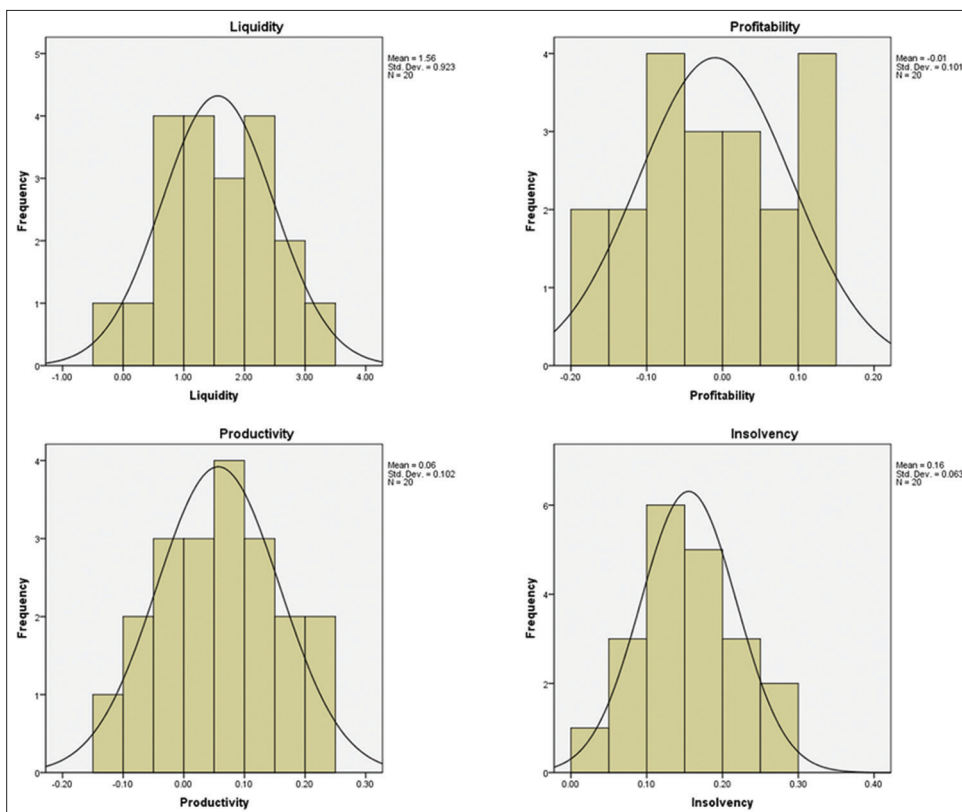
Appendix Table 1: Calculation of Z-score

Country	Malaysia						
Bank	**OCBC Al-Amin**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	1,110,438	1,339,745	1,090,967	2,255,032	3,168,801		
Total assets	4,872,208	4,305,378	5,710,136	6,959,277	10,125,684		
6.5X1	1.50	2.04	1.25	2.13	2.05	Average liquidity	1.79
X2							
Retained earnings	6897	81,819	28,833	64,441	118,188		
Total assets	4,872,208	4,305,378	5,710,136	6,959,277	10,125,684		
3.26X2	0.00	0.06	0.02	0.03	0.04	Average profitability	0.03
X3							
EBIT	23,850	31,988	23,771	58,961	136,297		
Total assets	4,872,208	4,305,378	5,710,136	6,959,277	10,125,684		
6.72X3	0.03	0.05	0.03	0.06	0.09	Average productivity	0.05
X4							
Book value of equity	210,287	294,504	318,731	471,751	595167		
Total liability	4,661,921	4,010,874	5,391,405	6,487,526	9530517		
1.05X4	0.05	0.08	0.06	0.08	0.07	Average leverage	0.07
Annual Z-score	1.58	2.23	1.36	2.29	2.25	Average Z-score	1.94
Country	**Malaysia**						
Bank	**Asian Finance Bank**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	951,680,310	1,088,135,832	1,331,578,038	1,174,776,866	1,136,542,762		
Total assets	2,075,153,261	2,242,293,896	2,438,275,413	2,810,525,086	2,391,561,914		
6.56X1	2.99	3.16	3.56	2.72	3.09	Average liquidity	0.41
X2							
Retained earnings	−21,456,744	−55,771,729	−55,589,970	−61,224,255	−48,510,674.5		
Total assets	2,075,153,261	2,242,293,896	2,438,275,413	2,810,525,086	2,391,561,914		
3.26X2	−0.03	−0.08	−0.07	−0.07	−0.07	Average profitability	−0.07
X3							
EBIT	4,209,830	−27,869,406	181,759	−8,340,155	−7,954,493		
Total assets	2,075,153,261	2,242,293,896	2,438,275,413	2,810,525,086	2,391,561,914		
6.72X3	0.01	−0.08	0.00	−0.02	−0.02	Average productivity	0.10
X4							
Book value of equity	328,383,995	384,466,552	476,562,750	471,734,589	415,286,971.5		
Total liability	1,746,769,266	1,857,827,344	1,961,712,663	2,338,790,497	1,976,274,942.50		
1.05X4	0.20	0.22	0.26	0.21	0.22	Average leverage	0.09
Annual Z-score	3.16	3.21	3.74	2.84	3.23	Average Z-score	0.53
Country	**Malaysia**						
Bank	**Hong Leong Islamic Bank**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	1,041,524	1,252,617	977,555	1,707,920	1,499,959		
Total assets	9,141,960	9,962,346	12,178,617	21,902,469	21,728,546		
6.56X1	0.75	0.82	0.53	0.51	0.45	Average liquidity	0.61
X2							
Retained earnings	119,207	156,726	172,531	215,308	274,065		
Total assets	9,141,960	9,962,346	12,178,617	21,902,469	21,728,546		
3.26X2	0.04	0.05	0.05	0.03	0.04	Average profitability	0.04
X3							
EBIT	100,040	111,423	90,059	204,248	300,640		
Total assets	9,141,960	9,962,346	12,178,617	21,902,469	21,728,546		
6.72X3	0.07	0.08	0.05	0.06	0.09	Average productivity	0.07
X4							
Book value of equity	740,031	818,810	865,704	1,185,723	1,352,741		
Total liability	8,401,929	9,143,536	11,312,913	20,716,746	20,375,805		
1.05X4	0.09	0.09	0.08	0.06	0.07	Average leverage	0.08
Annual Z-score	0.96	1.05	0.70	0.67	0.66	Average z-score	0.81

(*Contd...*)

Appendix Table 1: (*Continued*)

Country	Malaysia						
Bank	**CIMB Bank**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	719,160	527,286	331,053	136,990	73,584		
Total assets	14,315,200	16,754,508	18,380,429	19,159,301	20,896,369		
6.56X1	0.33	0.21	0.12	0.05	0.02	Average liquidity	0.14
X2							
Retained earnings	1,995,678	1,263,815	1,281,871	1,521,610	1,306,058		
Total assets	14,315,200	16,754,508	18,380,429	19,159,301	20,896,369		
3.26X2	0.45	0.25	0.23	0.26	0.20	Average profitability	0.28
X3							
EBIT	703,478	1,552,599	2,005,154	1,613,082	2,132,339		
Total assets	14,315,200	16,754,508	18,380,429	19,159,301	20,896,369		
6.72X3	0.33	0.62	0.73	0.57	0.69	Average productivity	0.59
X4							
Book value of equity	11,215,234	12,945,147	12,963,194	13,202,931	14,923,865		
Total liability	3,099,966	3,809,361	5,417,235	5,956,370	5,972,504		
1.05X4	3.80	3.57	2.51	2.33	2.62	Average leverage	2.97
Annual Z-score	4.91	4.64	3.59	3.20	3.54	Average Z-score	3.98
Country	**Malaysia**						
Bank	**HSBC Ammnah**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	377,271	751,279	497,563	978,965	1,209,422		
Total assets	4,792,676	6,753,635	10,197,379	12,146,179	14,564,398		
6.56X1	0.52	0.73	0.32	0.53	0.54	Average liquidity	0.53
X2							
Retained earnings	11,360	74,652	153,216	328,085	472,050		
Total assets	4,792,676	6,753,635	10,197,379	12,146,179	14,564,398		
3.26X2	0.01	0.04	0.05	0.09	0.11	Average profitability	0.06
X3							
EBIT	77,428	63,278	97,797	165,171	187,657		
Total assets	4,792,676	6,753,635	10,197,379	12,146,179	14,564,398		
6.72X3	0.11	0.06	0.06	0.09	0.09	Average productivity	0.08
X4							
Book value of equity	740,644	784,516	864,059	1,039,780	1,177,382		
Total liability	4,052,032	5,969,119	9,333,320	11,106,399	13,387,016		
1.05X4	0.19	0.14	0.10	0.10	0.09	Average leverage	0.12
Annual Z-score	0.82	0.97	0.53	0.81	0.83	Average Z-score	0.79
Country	**Malaysia**						
Bank	**KFH Malaysia Berhad**						
Year	**2009**	**2010**	**2011**	**2012**	**2013**	**Particular**	**Average value**
X1							
Working cap	2,808,073	1,817,169	865,121	944,483	1,214,544		
Total assets	11,576,324	10,892,777	10,142,319	8,970,840	9,396,136		
6.56X1	1.591	1.094	0.560	0.691	0.848	Average liquidity	0.96
X2							
Retained earnings	25,775	−224,960	−821,168	−808,989	82,406		
Total assets	11,576,324	10,892,777	10,142,319	8,970,840	9,396,136		
3.26X2	0.007	-0.067	-0.264	-0.294	0.029	Average profitability	−0.12
X3							
EBIT	−30,163	−139,357	745,171	93,341	145,223		
Total assets	11,576,324	10,892,777	10,142,319	8,970,840	9,396,136		
6.72X3	−0.018	−0.086	0.494	0.070	0.104	Average productivity	0.11
X4							
Book value of equity	2,275,120	2,021,711	1,456,119	1,507,499	1,575,397		
Total liability	9,301,204	8,871,066	8,686,200	7,463,341	7,820,739		
1.05X4	0.257	0.239	0.176	0.212	0.212	Average leverage	0.22
Annual Z-score	1.838	1.180	0.965	0.679	1.192	Average Z-score	1.17

(*Contd...*)

Appendix Table 1: (*Continued*)

Country	Malaysia						
Bank	Public Islamic Bank						
Year	2009	2010	2011	2012	2013	Particular	Average value
X1							
Working cap	1,310,633	1,661,878	1,331,722	1,684,330	1,729,192		
Total assets	22,730,606	23,660,885	29,420,028	29,299,144	34,472,575		
6.56X1	0.38	0.46	0.30	0.38	0.33	Average liquidity	0.37
X2							
Retained earnings	157,310	220,380	438,088	278,074	317,834		
Total assets	22,730,606	23,660,885	29,420,028	29,299,144	34,472,575		
3.26X2	0.02	0.03	0.05	0.03	0.03	Average profitability	0.03
X3							
EBIT	459,832	522,002	581,290	544,748	473,239		
Total assets	22,730,606	23,660,885	29,420,028	29,299,144	34,472,575		
6.72X3	0.14	0.15	0.13	0.12	0.09	Average productivity	0.13
X4							
Book value of equity	1,505,887	1,815,388	2,098,332	2,287,279	2,591,446		
Total liability	21,224,719	21,845,497	27,321,696	27,011,865	31,881,129		
1.05X4	0.07	0.09	0.08	0.09	0.09	Average leverage	0.08
Annual Z-score	0.61	0.73	0.56	0.62	0.54	Average Z-score	0.61
Country	Malaysia						
Bank	Alliance Islamic bank						
Year	2009	2010	2011	2012	2013	Particular	Average value
X1							
Working cap	341,651	444,531	521,905	436,016	429,947		
Total assets	3,171,853	4,881,779	6,223,100	6,508,221	6,825,115		
6.5X1	0.71	0.60	0.55	0.44	0.41	Average liquidity	0.54
X2							
Retained earnings	15,861	31,925	82,222	118,621	138,853		
Total assets	3,171,853	4,881,779	6,223,100	6,508,221	6,825,115		
3.26X2	0.02	0.02	0.04	0.06	0.07	Average profitability	0.04
X3							
EBIT	42,434	113,264	75,523	97,145	74,765		
Total assets	3,171,853	4,881,779	6,223,100	6,508,221	6,825,115		
6.72X3	0.09	0.16	0.08	0.10	0.07	Average productivity	0.10
X4							
Book value of equity	333,794	416,468	467,942	547,090	592,554		
Total liability	2,838,059	4,465,311	5,755,158	5,961,131	6,232,561		
1.05X4	0.12	0.10	0.09	0.10	0.10	Average leverage	0.10
Annual Z-score	0.94	0.87	0.76	0.70	0.65	Average Z-score	0.78

EBIT: Earnings before interest and taxes

Appendix Table 2: Data normality tests

Variables	Kolmogorov–Smirnova			Shapiro–Wilk		
	Statistic	df	Significant	Statistic	df	Significant
Domestic						
Islamic Banks						
Liquidity	0.058	19	0.200*	0.987	19	0.991
Profitability	0.066	19	0.200*	0.990	19	0.999
Productivity	0.040	19	0.200*	0.993	19	1.000
Insolvency	0.063	19	0.200*	0.993	19	1.000
Z-score	0.067	19	0.200*	0.991	19	0.999
Foreign						
Islamic Banks						
Liquidity	0.058	19	0.200*	0.989	18	0.998
Profitability	0.085	19	0.200*	0.990	18	0.999
Productivity	0.060	19	0.200*	0.991	18	0.999
Insolvency	0.054	19	0.200*	0.988	18	0.995
Z-score	0.058	19	0.200*	0.989	18	0.998