

## Application of CAMEL model on the GCC Islamic Banks: 2008-2014

Vijaya Kumar<sup>1</sup> & Hameedah Sayani<sup>2</sup>

### Abstract

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**Purpose-** The purpose of this paper is to evaluate the soundness of Islamic banks in the GCC for the period 2008 to 2014. **Methodology-** The study involves 11 listed Islamic banks based in the GCC countries of Saudi Arabia, United Arab Emirates, Qatar, Bahrain, and Kuwait. The study applied the CAMEL parameters, which include capital adequacy, asset quality, management capability, earning ability, and liquidity ratio. Multivariate Z- score model is also used to ensure robustness of the results. **Findings-**The findings suggest that although the Islamic banks in the GCC have adequate capital, their asset quality and earning ability have deteriorated over the period of study. However, the impact was not so significant that these banks will be pushed to the brink of bankruptcy. **Practical implications-** The information is of interest to stakeholders, who is concerned about the soundness of the banking sector in general, as any negative impact on the financial sector may have enormous implications for the country, which was indeed evident in the recent financial crisis. Insight into these elements provides a focus for management of the bank, by identifying areas that need attention.

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**Keywords:** Capital adequacy, Asset quality, Management capability, Earning ability, Liquidity ratio, Z-score, Islamic banks.

### 1. Introduction

The global economic and financial crisis has affected the banking industry in general and the analysts are of the opinion that the crisis has not calmed down yet. Although the crisis impacted most banks around the world, the Islamic banks seem to be resilient to the financial crisis, as very few Islamic banks declared bankruptcy during these times of turmoil. Kaleem (2000) suggests that the impact of the Asian financial crisis on Islamic banks was insignificant due its assets-linked nature. Ahmed (2009) asserts that the financial crisis could have been avoided if the principles of Islamic finance were followed by the commercial banks too. Alam, et al. (2011) argues that Islamic banking also provides a sustainable financial alternative to the world economic system.

The globalization effect has put Islamic banks in tough competition with the commercial banks in the global arena. The Islamic banking industry is merely four decades old, but even in this short period it has experienced unprecedented growth. According to Banker (2011) the global Islamic banking assets have grown from \$145bn in 2002 to \$1,033bn in 2010 (Banker, 2011), with an expected compound annual growth rate (CAGR) of 15% to 20% until 2015. Despite the rapid growth of the Islamic finance industry, the Islamic banking assets represent only 1.5% of total global banking assets (Banker, 2011).

Like in any other country, a sound and robust banking sector is important for the GCC economies. In recent times, all the GCC countries have encouraged the development of Islamic banks leading to the existence of dual banking systems. Besides full-fledged Islamic banks, many conventional banks offer Islamic products through Islamic banking windows, hence making the GCC banking sector even more competitive.

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<sup>1</sup> Business Department, Middlesex University, Dubai, UAE. [v.kumar@mdx.ac](mailto:v.kumar@mdx.ac)

<sup>2</sup> Business Department, Middlesex University, Dubai, UAE. [H.Sayani@mdx.ac](mailto:H.Sayani@mdx.ac)

The importance of the GCC countries cannot be undermined for various reasons. All of the GCC countries are oil producing countries with Saudi Arabia being the largest global oil supplier in the world (US Energy Information Administration, 2012). Hamilton (2003) found that the post Second World War, oil price shocks or political instability in the MENA region contributed to most recessions in the world; hence it is clear that the GCC countries can affect the macroeconomic fundamentals of other countries. Additionally, with the help of investor friendly policies, the GCC countries have attracted huge foreign investments in recent years (Groh and Wich, 2012). Turmoil in the GCC markets and institutions can cause exaggerated volatilities in the world markets as it was witnessed in 2009, when the Dubai government indicated its inability to pay its debt and asked for a restructuring of debt (Watson, 2010). Similarly, foreign shocks can have a significant effect on the GCC economies (Hamoudeh and Choi, 2006). With the huge impact of the current financial crisis in the global banking industry and supposed resilience of Islamic banks to these shocks, there has been a sudden increase in interest in evaluating the financial performance of the Islamic banks during and post crisis (Hidayat and Abduh, 2012).

Traditional approach of financial performance analysis includes financial ratios (Eljelly and Elobeed, 2013) and the modern approach, includes the CAMEL rating system (Alani, Yacoob, Hamdan, 2013). These measures help to evaluate the financial soundness and safety of entities within a particular industry. Olson and Zoubi, (2008) classify the financial ratios into five groups, i.e. profitability, efficiency, asset quality, liquidity and risk and find that these ratios provide valuable insight into the financial health of an organization. On the other hand, the CAMEL ratings system examines capital adequacy, asset quality, management, earnings, and liquidity and is widely used by supervisory bodies around the world to rate financial soundness of banking institutions. The CAMEL ratings allow identification of banks that may need additional capital or alternative arrangements to continue their operations. Besides regulatory bodies, many researchers have also opted to use the CAMEL ratings to evaluate and rank the performance of banks; both conventional and Islamic (for example Khouaja and Lotfi Boumediene, 2014; Jaffar and Manarvi, 2011; AIGindi et al. 2009).

The purpose of this study is to evaluate the financial safety and soundness of the GCC Islamic banks during and post the recent financial crisis i.e. 2008-2014 and accordingly the study adopts a multifaceted approach to analyze the soundness of Islamic banks in the GCC in turbulent times. This study measures the overall soundness and safety of selected Islamic banks in the GCC. Identification of weak parameters through CAMEL model may help to mitigate potential losses that may lead to bank failures. The CAMEL parameters include capital adequacy, asset quality, management capability, earnings ability and liquidity ratio. To ensure robustness of the results, Emerging markets (EM) Z-score is also calculated to evaluate, whether the chosen banks are under financial distress during the period under consideration.

The study is organized as follows: section 2 provides a brief but comprehensive literature review of studies using CAMEL parameters and the Z-Score; section 3 provides details of the methods adopted; section 4 presents the discussion on the results and section 5 provides the conclusion, the possible avenues for the future research and the practical application of the study.

## **2. Literature Review**

Gasbarro et al. (2002) argues that analyzing soundness of banks during the financial crisis is a challenging task as most indicators of financial health deteriorate in turbulent times. Increased bank failures during 2008 and 2010 imply that financial crises may induce unprecedented changes to financial health of banks, which is not only detrimental to the investors but also affects the economy in general (Kerstein and Kozberg, 2013; Ng and Roychowdhury, 2013).

CAMEL indicators and ratings are found to be the most effective determinants of bank failures during the 1985-1992 financial crisis (Cole and Gunther, 1995, 1998; Thomson, 1992) and in 2009 (Cole and White, 2012). These studies provide evidence that the chances of failure of banks with adequate capital, superior asset quality, higher earnings, and sufficient liquidity are low. Positive relationship between the banks' failure and loan loss reserves is documented by Ng and Roychowdhury (2013). Merchant (2012) compared the performance of Islamic banks and conventional banks in GCC using the CAMEL model and further focused on the steps taken by the banks to reduce the impact of the global crisis. The study conveyed that Islamic banks in the GCC have increased the loan loss reserves after the recent crisis.

Kerstein and Kozberg (2013) suggest that the components of the CAMEL model individually and collectively hold the capability of predicting bank failure in the US especially surrounding the recent financial crisis. Hanc (1998) evaluate the importance of various factors in the CAMEL model that cause financial distress to banks and find that internal factors determine the financial health of banks. On the other hand Gasbarro et al. (2002) identified that the importance of various components of the CAMEL model varies with changing economic times and that the coefficients associated with the components of the CAMEL model during tranquil times are different from those during turbulent times. Rahman et al. (2004) conducted a study comprising banks in Indonesia, South Korea and Thailand for the period 1995 to 1997. The authors used logistic analysis and found that capital adequacy, loan management, and operating efficiency are the most reliable predictors of financial distress in these countries. Peek et al. (2003) study the relationship between the worst CAMEL rating and banks' lending behavior and find that the worst ratings dramatically affect banks' lending practices. Derviz and Podpiera (2008) evaluate the association between S&P ratings and CAMEL ratings for three largest banks in the Czech Republic. The authors find that while capital adequacy, value at risk, and leverage are the best predictors under the CAMEL ratings, funding spread, capital adequacy, and the ratio of total loans to total assets are the most relevant rating predictors in S&P ratings. The study conducted by DeYoung (1998) reveals that the management capability is directly linked to the earning ability and asset quality of the bank. The findings of the study pointed out that management capability increases with an increase in earning ability and asset quality, and vice versa.

Application of the CAMEL parameters in literature has been quite diverse. Cole and Gunther (1998) use the CAMEL model to compare the effectiveness of on-site and off-site monitoring in predicting bank failures. Berger et al. (2001) use the CAMEL ratings to evaluate the level of bank supervision during the crisis period of 1989 and 1992, and post crisis during 1993 and 1998. The authors also examine if the changes in the intensity of bank supervision affected the lending practices of banks. The results suggested that bank supervision was tougher during the crisis; however, the impact of intense supervision of banks' lending behavior was marginal. Bongini et al. (2002) evaluate the performance of various indicators in predicting bank failure in East Asia during 1996-1998 considering accounting data, stock prices, and credit ratings. The authors find that the performance of these indicators varied significantly under different circumstances. The results implied that while share prices responded quickly to the newly available information as compared to the ratings, their performance cannot be considered superior to accounting data or judgment based indicators; hence, the authors recommended use of multiple indicators to evaluate fragility of banks especially during crisis.

Khouaja and Lotfi Boumediene (2014) use CAMEL parameters to determine the financial health of 150 commercial banks across six European countries during 2003 and 2008. The authors argue that the incentives associated with increased profitability of banks are far greater than those associated with risk management and policies that aim to make banks stable. The banks opt to increase profitability and compromise on risk mitigating practices, enhancing banks' vulnerability. The authors suggest that a balance need to be created between two rather diverse objectives.

With respect to Islamic banks, Jaffar and Manarvi (2011) compare the performance of Islamic and conventional banks in Pakistan using the CAMEL indicators and find that while both kinds of banks are at par with respect to the asset quality (the probability of loans becoming non-performing loans), Islamic banks have high CAR and superior liquidity as compared to their conventional counterparts; however, the conventional banks ranked better in terms of management quality and earnings ability.. a comparative study of Islamic and conventional banks in Malaysia using some indicators of the CAMEL model, Wasiuzzaman and Gunasegavan (2013) found that Islamic banks outperformed their conventional peers on variables like operational efficiency, asset quality, liquidity, capital adequacy and board independence for the period 2005-2009; but the conventional banks possessed higher average assets, larger bank and board sizes in the same period. Similarly, AIGindi et al. (2009) used two indicators from the CAMEL model (liquidity and asset quality) to measure the performance of Malaysian Islamic and conventional banks. The results of the study highlighted superior performance of Islamic banks on both dimensions.

Another common method of measuring financial stability of entities is the application of Z-Score. The original Z-score model was devised by Altman (1968) and was primarily applicable on manufacturing forms in the US. Many variations of Z-score are presented in literature thereafter. The Z-score model is capable of predicting bankruptcy with 95% accuracy for estimations and 84% for holdout samples (Grice and Ingram, 2001). Researchers have used the model extensively to evaluate financial stability in a variety of industries (e.g., Chen and Wei, 1993; Carcello et al., 1995; Chen and Church, 1996; Subramanyan and Wild, 1996). Wang and Cambell (2010) compared the performance of multiple Z-score variations, using a sample of 1,336 Chinese listed companies over 11 years (1998 - 2008). They found that while some variations of Z-score models perform better than the others, the original Altman Z-score exhibited the highest accuracy in identifying the firms under distress. Al Zaabi (2011) analyzed the financial stability of four Islamic banks in the UAE using emerging market Z-score for the period 2004 - 2007. The results verified that though the Z-scores of some banks are weakening, they are above the benchmark scores, suggesting financial stability of Islamic banks in the UAE.

More recently, Maghyereha and Awartani (2014) found that typical CAMEL indicators are the best predictors of bank fragility in the GCC banking industry, during 2000 and 2009, using the data for 70 banks. This empirical study emphasizes that bank soundness in the GCC can be predicted with the help of the CAMEL parameters. Authors like Ali (2011) suggest that the Islamic banks demonstrated resilience to the ongoing financial crisis the MENA region. However, Kassim and Majid (2010) found that both conventional and Islamic banks in Malaysia suffered during the Asian financial crisis of 1990s and the financial crisis of 2008, suggesting that the interest-free nature of Islamic finance does not provide a buffer to the Islamic banks.

There is a lack of studies primarily based in the GCC, which indicates that there is a need to evaluate the soundness of Islamic banks in the GCC. It is against this backdrop that this research has been undertaken to fill up this gap and subsequently uses the most recent data for this purpose.

### 3. Methods

The study involves 11 listed Islamic banks based in the GCC countries of Saudi Arabia, United Arab Emirates, Qatar, Bahrain, and Kuwait. The banks included in the sample are presented in Table 1. The table also presents total equity and the total asset value of the banks included in the study in US\$ as of 2014. The study was restrained by limited availability of data, as some Islamic banks in the GCC are not publicly listed and data for some listed Islamic banks are unavailable for the complete period of analysis. For example, Islamic banks in Oman are excluded from the sample due to lack of data, as two listed Islamic banks in Oman have recently come into operation. The banks included in the sample were selected on the basis of the availability of financial statements that were extracted from the websites of the banks. There is a currency difference in the financial statements used, as the banks originate from different countries. However, the use of ratio analysis circumvents problems arising from currency differences.

**Table 1: Banks included in the study**

In USD Millions			
GCC Countries	Banks	Total Assets	Total Equity
Saudi Arabia	Arab National Bank	164.67	20.64
	Bank al Bilad	45.23	5.89
	Bank al Jazira	59.98	5.73
United Arab Emirates	Dubai Islamic bank	123.88	17.71
	Abu Dhabi Islamic Bank	103.16	13.07
	Sharjah Islamic Bank	26.01	4.59
Qatar	Qatar Islamic Bank	96.11	14.17
	International Islamic bank	38.40	5.36
Bahrain	Ithmar	2.70	0.20
	Bahrain Islamic bank	0.88	0.08
Kuwait	Boubyan	2.65	0.30

**Source:** Audited financial statements 2014

The period of analysis extends from 2008 to 2014 and uses seven year data for each bank included in the sample with a few exceptions as some banks in the sample have not yet published their annual financial statement for 2014. It is evident that the period of analysis includes the crisis and post crisis period that engulfed the global banking sector in the recent years. Data analysis in this study comprises of several steps. First, all the ratios under the CAMEL parameters and the emerging markets Z-core (Altman, 2002) are calculated, followed by calculation of average and standard deviation for each ratio as well as the Z-score. Descriptive statistics are presented in two ways: on an annual basis for all the Islamic banks in the GCC and for individual banks over the period of five years. Second, single factor ANOVA is used to identify if there are statistically significant variations within the industry during the period of analysis. Simltaneous use of the CAMEL indicators and the emerging markets Z-Score will ensure robustness of the results.

The following subsections provide the details on the ratios and models included in the data analysis.

### 3.1 CAMEL Model

Following ratios are calculated as a part of the CAMEL parameters.

*Capital adequacy:* shareholders' equity/ total assets. This ratio examines the safety and the financial stability of the banks. The higher the capital adequacy, the lesser will be the bankruptcy risks.

*Asset quality:* The asset quality of a bank is based upon the financial ratio of non-performing loans (NPL) and total loans. The higher ratio indicates a higher risk of loans becoming non-performing. The lower the ratio, less capital is required by the bank to support its loan portfolio

*Management capability:* salaries and benefits to average assets. This ratio affects the profitability of the bank indicating the capability of the management. Another way to measure the management capability is by assessing the growth rate of total assets or total loans; more assets or loans indicate the capability of the management. Although these measures are not used in this study, they have been reported in Table D.

*Earnings ability:* net interest income to average assets, parameter for measuring financial performance, which indicates the earning ability of a bank. Return on assets (ROA) and return on equity (ROE) also measures the earning ability of the bank. The higher the ratio, the higher is the earning capability of the bank. Alternative measures of earnings ability are not included in the study; however, they have been included in Table D.

*Liquidity:* total customer deposit/total assets. It measures the liquidity of the bank, which helps to reduce the chances of the failure of the bank. If the bank does not have enough liquidity, then it may not be in a position to pay its depositors as well as its day to day payments.

### 3.2 Z-Score Model

Given the peculiar nature of emerging markets and the entities operating within these markets Altman (2002) devised a Z-score model particularly for firms operating in the emerging economies. The Emerging Markets (EM) Z-score model is presented as:

$$\text{Z-score} = 3.25 + 6.56 (X1) + 3.26 (X2) + + 6.72 (X3) + + 1.05 (X4)$$

Where

X1 = Working capital to total assets, a measure of liquidity of a firm.

X2 = Retained earnings to the total assets, a measure of profitability.

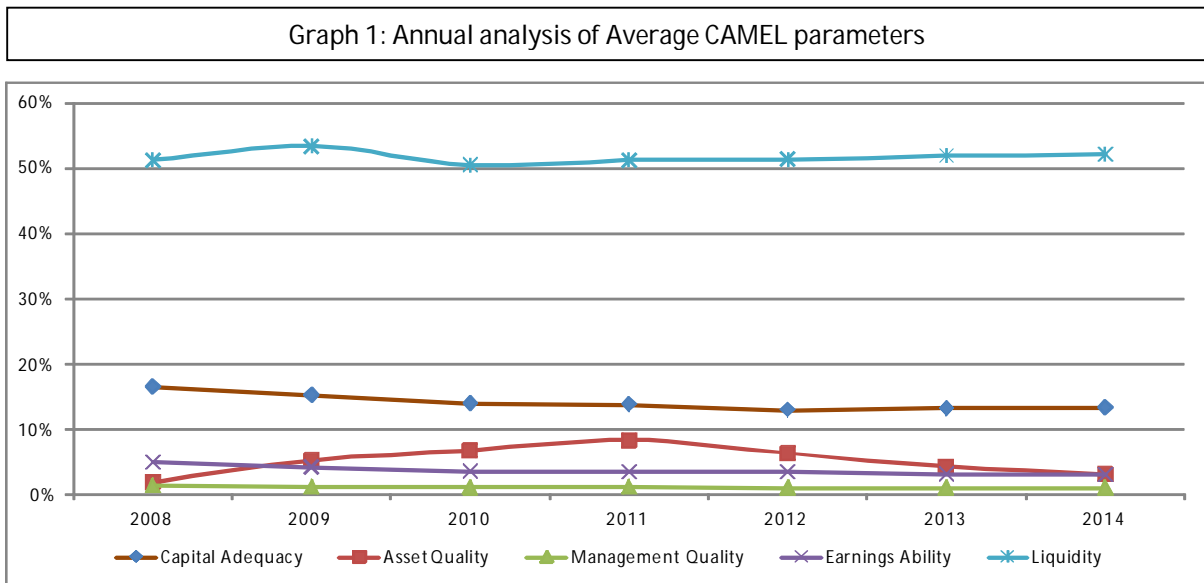
X3 = Earnings before interest and taxes (EBIT) to total assets, measures efficiency.

X4 = Market value of equity or firm's net worth, examines stockholders' equity to total liabilities.

Firms are considered to be in the safe zone if the EM Z-score if greater than 2.6 and in danger zone if the EM Z-score is less than 1.10. Scores between 2.6 and 1.10 suggest that the firm is in the grey zone (Altman, 2002).

**4. Discussion**

As per the American International Assurance (AIA), the Capital Adequacy Ratio (CAR) should vary between 4% and 6% (Dang, 2011). On the other hand, Bank for International Settlement (BIS) suggests a minimum requirement of 8% for CAR (Dang, 2011). Higher CAR signifies the strength of the bank and its ability to withstand changes in the financial environment (Sangmi and Nazir, 2010). Measuring against both criteria, in the five year period of study, i.e. 2008-2014, the average CAR (graph 1) is declining from 16.45% to 13.33%, however, it is much above the AIA's norm of 4-6%. It also meets the minimum requirement of 8% as per the Bank for International settlement (BIS). The standard deviation (Table 2) of industry wide CAR varies between 6.02% and 2.53% exhibiting greater deviation from the average in all five years of analysis.



The average CAR for individual banks (Table 3)) varies between 8.85% (International Islamic Bank, Qatar) and 23.88% (Sharjah Islamic bank, UAE). The highest standard deviation is reported by Ithmar bank (6%), whereby the bank-wise standard deviation has varied between 1.52% and 6.0% in the five years of analysis. All the banks in the study have exhibited high levels of CAR in all five years of analysis. CAR may have a bearing on the decisions made by the bank like landing in high risk, but profitable areas, diversification through branches or subsidiaries etc. (Shankar 1997). However, a very high ratio may also indicate bank's inefficiency to utilize its capital to the fullest potential.

**Table 2: Descriptive Statistics for the GCC Islamic Banking Industry**

	2008		2009		2010		2011		2012		2013		2014	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Capital Adequacy	16.45%	6.02%	15.23%	5.86%	13.99%	5.28%	13.82%	5.42%	12.96%	5.05%	13.19%	3.92%	13.33%	2.53%
Asset Quality	1.89%	1.13%	5.20%	3.36%	6.64%	6.02%	8.26%	12.85%	6.27%	7.67%	4.22%	3.59%	3.04%	2.91%
Management Quality	1.34%	0.63%	1.12%	0.54%	1.06%	0.46%	1.08%	0.42%	1.02%	0.42%	1.02%	0.39%	1.01%	0.44%
Earnings Ability	4.89%	1.88%	4.13%	1.16%	3.58%	1.34%	3.40%	1.30%	3.40%	1.24%	3.08%	0.69%	3.01%	0.49%
Liquidity	51.21%	29.20%	53.31%	29.69%	50.49%	32.53%	51.18%	32.76%	51.30%	31.55%	51.86%	30.11%	52.10%	30.98%
Z-Score	4.11	0.82	4.01	0.82	4.21	0.99	4.38	0.90	4.23	0.66	4.23	0.69	4.35	0.51

**Table 3: Descriptive Statistics for Individual Islamic Banks**

	ROA		ROE		Capital Adequacy		Asset Quality		Management		Earnings Ability		Liquidity		Z-Score	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev		
<b>Qatar</b>																
Qatar Islamic Bank	3.86%	1.28%	14.67%	6.12%	19.16%	2.97%	0.99%	0.21%	0.69%	0.08%	3.56%	0.83%	15.60%	1.55%	4.43	0.24
International Islamic bank	2.02%	0.85%	20.03%	3.38%	8.85%	3.46%	0.77%	0.15%	0.23%	0.09%	1.72%	0.54%	8.45%	4.89%	4.30	0.44
<b>Bahrain</b>																
Ithmar	-1.18%	2.06%	-11.51%	11.78%	12.13%	6.00%	7.49%	2.32%	1.16%	0.22%	2.56%	1.05%	22.16%	13.32%	2.86	0.45
Bahrain Islamic bank	1.53%	1.52%	-12.79%	25.77%	11.89%	4.01%	18.25%	15.19%	1.19%	0.11%	3.82%	0.50%	10.73%	2.70%	5.47	0.55
<b>Kuwait</b>																
Boubyan	-0.29%	2.26%	-4.76%	23.78%	13.87%	3.16%	2.45%	1.83%	1.24%	0.55%	4.06%	2.27%	74.12%	3.73%	4.07	0.38
<b>Saudi Arabia</b>																
Bank al Jazira	0.64%	0.44%	5.51%	4.49%	13.31%	3.04%	4.07%	2.60%	1.38%	0.21%	3.53%	0.60%	78.79%	3.26%	4.28	0.42
Bank al Bilad	0.97%	1.22%	8.39%	9.80%	15.15%	2.65%	3.45%	1.89%	1.98%	0.26%	4.30%	1.12%	78.78%	4.79%	5.21	0.46
Arab National Bank	1.84%	0.19%	14.52%	2.59%	12.95%	1.24%	1.76%	1.02%	0.85%	0.03%	2.72%	0.27%	76.18%	2.26%	3.84	0.23
<b>United Arab Emirates</b>																
Dubai Islamic bank	1.45%	0.52%	12.66%	3.92%	11.98%	1.67%	6.13%	1.80%	1.00%	0.05%	4.27%	0.39%	72.96%	3.32%	3.85	0.34
Abu Dhabi Islamic Bank	2.47%	0.59%	10.48%	4.99%	11.98%	1.52%	6.56%	2.30%	1.14%	0.04%	4.92%	0.57%	73.76%	1.38%	3.77	0.43
Sharjah Islamic Bank	3.18%	0.66%	6.37%	0.90%	23.88%	3.42%	5.16%	1.69%	1.29%	0.07%	4.89%	1.32%	59.11%	2.98%	4.23	0.43

High asset quality ratio is indicative of lower asset quality. As per AIA's criteria, the asset quality ratio should be less than or equal to 1%, and a ratio above 1% suggests an increase in non-performing loans (NPL) (Dang, 2011). Measuring against this criteria, the average asset quality (graph1) for 2008-2014 shows a steep increase from 2008 (1.89%) to 2011 (8.26%), marginal decline in 2012 (6.27%) to 2014 (3.04%). The increase in asset quality over the period mentioned can be related to the recent financial turmoil, and the decrease in the asset quality ratio from 2012 to 2014 suggests a positive outlook indicating the recovery of banks from the financial crisis. However, the entire annual ratios are very high, indicating higher NPLs in the period of study. Moreover, the standard deviation (Table 2) over the period of study varies from 1.13% to 12.85% indicating a greater deviation from its mean.

The bank-wise average asset quality ratio (Table 3) is highest for Bahrain Islamic bank (18.25%) and lowest for the International Islamic bank (0.77%), which are higher than the AIA's rate of 1%, except for International Islamic bank, indicating higher risks of bad loans and the requirement of more capital to survive default loans for all Islamic banks considered in the study.

The management quality plays a substantial role in the success of the banks (Grier, 2007). AIA's approach to bank analysis emphasizes that good management quality leads to better reputation of the company. An important factor affecting the profitability is the ratio of salaries and benefits to average assets, which indicates the management capabilities and the ratio is approximately 1.5% of high efficiency banks (Hays, Lurgio, and Gilbert Jr., 2009). The average management capability ratio (graph 1) over the years 2008-2014 is decreasing from 1.34% to 1.01%, which is less than 1.5% and not in line with Hays, Lurgio, and Gilbert Jr. (2009) study. Management quality remained almost same in all the five years of analysis with low standard deviation ranging from 0.39% to 0.63% (Table 2).

The bank-wise management, quality ratio (Table 3) is highest for Bank Al Bilad (1.98%) and lowest for the International Islamic bank, Qatar (0.23%). The bank-wise standard deviation is low, ranging from 0.08 to 0.26 indicating insignificant deviation from its mean. However, Sarker (2006) has pointed out that it is difficult to draw any conclusion on management capabilities based on monetary indicators as management capabilities are qualitative and subjective.

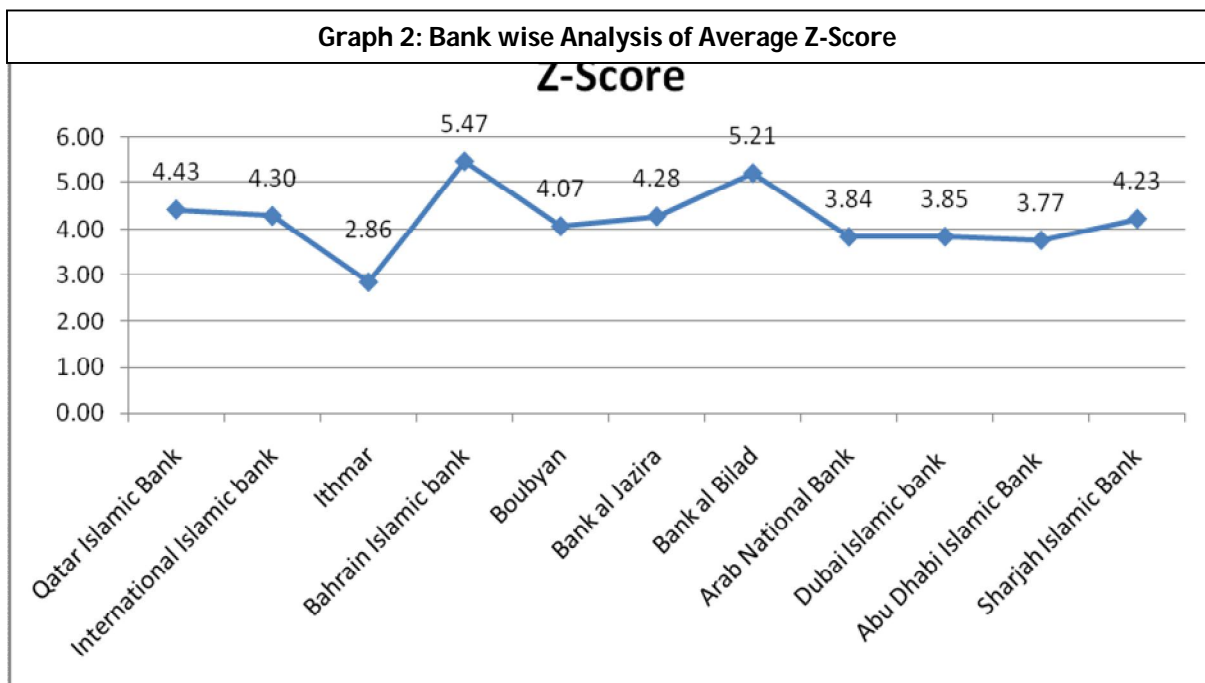
Strong earnings of banks reflect their good health and also demonstrate banks' ability to support present and future operations (Sarker 2006). The earning ability ratio is measured by net interest income margin (NIM), which is the net interest income to average assets. As per AIA's CAMEL approach a bank should have a NIM greater than 4.5% to indicate strong earning ability. As per this measure, the average annual NIM (graph 1) portrays a downward trend in earnings, and it has declined from 4.89% to 3.01% during the period of study. This might indicate that Islamic banks in GCC countries have not recovered from the banking crisis in terms of earnings. The standard deviation (Table 2) varied from 1.88% to 0.49%, suggesting that the annual earning ability of individual banks has remained the same during the period of study; also, indicating the overall inability of Islamic banks to improve their earning potential.

The average NIM bank-wise (Table 3) shows that International Islamic bank (1.72%), Ithmar (2.56%) and Arab National bank (2.72%) have a low earning ability, whereas all the banks in the UAE have very strong earning ability that varies from 3.56% to 4.92%. The standard deviation of the earnings ability ratio varies from 0.27% to 2.27% that suggests that over the period of five years the earnings ability of the banks have deviated from the mean indicating different earning ability of the banks considered in the study.

Liquidity measures the ability of a bank to transfer the financial assets, such as investment securities at a short notice to the owners (Sangmi and Nazir, 2010). The liquidity ratio depends on the customer deposits to total assets, which should be greater than or equal to 75% as per the AIA standards. The average annual liquid ratios (graph 1) ranged between 50.49% to 52.10% in the period of study from 2008 to 2014. This exhibit that although average liquidity is improving marginally, it has not yet reached the AIA standards of 75%. The annual standard deviation (Table 2) ranges between 29.20% and 32.76% during the period of analysis, which suggests wider dispersion in liquidity in the industry.

The liquidity position (Table 3) shows that Qatar Islamic bank (15.60%), International Islamic bank (8.45%), Ithmar bank (22.16%), Bahrain Islamic bank (10.73%) has a very low liquidity ratio. The majority of the banks considered in the study that are located in Kuwait, UAE and Saudi Arabia have greater than 75% liquidity ratio, suggesting that these banks will not be adversely affected in the short run by the lack of liquidity. The standard deviation for the banks varies from 1.38% to 13.32%, suggesting that the liquidity of all the banks are not the same. The need to maintain high liquidity in Islamic banks can be attributed to the nature of the transactions that the Islamic banks enter. The transactions are based on profit and loss sharing basis and unlike conventional banks, Islamic banks share the risk of failure equally with the borrower. Moreover, since the transactions are associated with real economic activity, the cash flows are expected to be generated in the long run (Errico and Farahbaksh, 1999; Izhar, 2010). Hence the Islamic banks should maintain high liquidity levels to provide a buffer against adverse situations. High liquidity in Islamic banks (considered in the study) of the UAE, Kuwait and Saudi Arabia can also be attributed to the unavailability of Shariah compliant investment opportunities (Ali, 2011).

ANOVA (Table A in the appendix) suggests that there are insignificant variations between the overall annual performances of GCC Islamic banks with respect to capital adequacy, asset quality, management capability, and liquidity ratios. However, earning ability is statistically significant at 5% whereby the p-values are close to 0. This suggests that the earning ability fluctuated over the period of analysis.





To confirm the results of the CAMEL model, further analysis is performed using the EM Z-Score. Firms are considered to be in the safe zone if the EM Z-score is greater than 2.6 (Altman 2002). The average EM Z-Score of all the 11 Islamic banks (graph 2) in the five year period of analysis is greater than 2.6, indicating that the performance of all the Islamic banks in the sample is satisfactory and they will not face bankruptcy in the near future. Bahrain Islamic bank (5.47) has the highest EM Z-score and Ithmar (2.86) has the lowest EM Z-score. However, none of the banks seem to be in financial distress.

## 5. Conclusion

The empirical analysis carried out with the help of the CAMEL parameters clearly indicates that the Islamic banks in the GCC were able to shield themselves from the recent global financial crisis. Chazi and Syed, (2010) attribute this resilience to inherent factors within Islamic banking such as prohibition of interest (*riba*) and prohibition of excessive uncertainty transactions (*Gharar*). The annual CAR is very strong in the period of study, which indicates the internal strength of the banks and a platform to increase their credit undertakings and lower its unexpected risks. The asset quality ratio of the selected GCC Islamic banks is much higher than the criteria laid by the AIA's CAMEL approach, indicating a risky portfolio after crisis, although some improvement in the ratio is witnessed from 2012 onwards. Risk sharing attributes of Islamic finance contributes to this element and the Islamic banks may end up carrying greater risk with respect to the quality of the assets and cash flows associated with long-term investments in assets (Errico and Farahbaksh, 1999; Izhar, 2010). The overall earnings ability worsened during the period of analysis. Since the period of analysis entails crisis, it is appropriate to link the performance of banks and industry to the financial crisis. It appears that some Islamic banks suffered more than others during the time of turmoil. The management capability ratio indicates a marginal decrease over the years, which can also be linked to the earning ability for the Islamic banks. The liquidity ratio for all the Islamic banks have more or less remained the same, indicating the banks' ability to sustain adverse situations. However, high standard deviation clearly indicates wider dispersion in the liquidity ratios across GCC Islamic banks. ANOVA suggests that the differences in the earning ability were found to be statistically significant during the period of analysis. Other performance indicators of the CAMEL model were found to be statistically insignificant. To substantiate the results, it was found that all the GCC Islamic banks have a Z-score higher than 2.6, exhibiting their resilience to the global crisis.

The findings of the study have implications for the investors to facilitate their decision-making. In addition, it is of importance to existing shareholders who delegate the stewardship responsibility to the management of the company. Insight into these elements provides a focus for management of the bank, by identifying areas that need attention. Moreover, the information is of interest to other stakeholders who are concerned about the soundness of the banking sector in general, as any negative impact on the financial sector may have enormous implications for the country, which was indeed evident in the recent financial crisis.

The focus of this study was the stability of GCC Islamic banks on multiple elements of CAMEL model. However, the findings of this study suggest that NPLs need attention in Islamic banks. It will be worthwhile to supplement this study in future by conducting a detailed study on the prevalence and reasons of NPLs, and NPL management.

## Appendix

Table A: Single Factor ANOVA

ROA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0030	6.0000	0.0005	1.6522	0.1466	2.2373
Within Groups	0.0205	67.0000	0.0003			
Total	0.0235	73				
ROE						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.1868	6.0000	0.0311	1.3510	0.2473	2.2373
Within Groups	1.5442	67.0000	0.0230			
Total	1.7310	73				
CAPITAL ADEQUACY						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0104	6.0000	0.0017	0.6688	0.6750	2.2373
Within Groups	0.1732	67.0000	0.0026			
Total	0.1836	73				
ASSET QUALITY						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0307	6.0000	0.0051	1.1737	0.3309	2.2373
Within Groups	0.2916	67.0000	0.0044			
Total	0.3223	73				
MANAGEMENT QUALITY						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0001	6.0000	0.0000	0.6081	0.7229	2.2373
Within Groups	0.0016	67.0000	0.0000			
Total	0.0016	73				
EARNINGS ABILITY						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0028	6.0000	0.0005	2.9282	0.0135	2.2373
Within Groups	0.0105	67.0000	0.0002			
Total	0.0133	73				
LIQUIDITY						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	0.0053	6.0000	0.0009	0.0092	1.0000	2.2373
Within Groups	6.4388	67.0000	0.0961			
Total	6.4441	73				
Z-score						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1.0646	6.0000	0.1774	0.2816	0.9437	2.2373
Within Groups	42.2189	67.0000	0.6301			
Total	43.2835	73				

Table B: Asset and Loan growth rate; ROA and ROE

Bank	Year	Assets growth rate	Loans growth rate	ROA	ROE
Ithmar	2010	29.41%	20.66%	-2.17%	-21.32%
	2011	2.25%	-59.81%	-0.87%	-10.73%
	2012	-60.52%	14.18%	-0.28%	-4.57%
	2013	2.46%	0.73%	-1.05%	-14.92%
Bahrain Islamic bank	2008	-	-	4.37%	13.41%
	2009	4.35%	-9.78%	0.77%	-13.81%
	2010	2.60%	29.82%	-0.14%	-39.69%
	2011	-10.32%	-53.21%	0.79%	-17.12%
	2012	-0.76%	12.77%	0.58%	-51.88%
	2013	9.30%	12.42%	1.89%	7.82%
Boubyan	2008	-	-	0.23%	1.40%
	2009	14.79%	9.06%	-5.39%	-58.37%
	2010	36.43%	43.02%	0.46%	2.50%
	2011	17.54%	24.92%	0.51%	3.21%
	2012	21.82%	23.29%	0.51%	3.72%
	2013	16.31%	16.43%	0.58%	4.72%
Bank al Jazira	2008	-	-	1.08%	9.47%
	2009	8.93%	5.05%	0.09%	0.58%
	2010	10.15%	21.66%	0.09%	0.59%
	2011	17.81%	23.65%	0.78%	6.14%
	2012	31.00%	27.56%	0.98%	9.65%
	2013	17.70%	14.01%	1.08%	11.36%
Bank al Bilad	2008	-	-	0.78%	3.89%
	2009	8.47%	36.30%	-1.43%	-8.27%
	2010	21.28%	13.31%	0.44%	2.98%
	2011	31.30%	13.47%	1.19%	9.65%
	2012	7.39%	31.96%	1.91%	21.55%
	2013	21.98%	25.64%	2.01%	14.29%
Arab National Bank	2008	-	-	1.91%	14.67%
	2009	-9.08%	-12.35%	2.06%	19.62%
	2010	5.20%	0.03%	2.14%	16.35%
	2011	1.33%	13.68%	1.63%	12.39%
	2012	1.33%	13.68%	1.83%	12.98%
	2013	16.22%	18.00%	1.71%	13.24%
Dubai Islamic bank	2008	0.95%	1.67%	1.80%	13.16%
	2009	19.38%	17.24%	1.73%	13.94%
	2010	-	-	1.83%	19.39%
	2011	-0.85%	-3.49%	1.45%	13.50%
	2012	6.92%	6.36%	0.62%	7.72%
	2013	0.50%	-7.17%	1.17%	10.38%
Abu Dhabi Islamic Bank	2008	5.27%	5.77%	1.29%	11.29%
	2009	18.79%	43.35%	1.52%	10.51%
	2010	9.36%	30.47%	2.28%	15.83%
	2011	-	-	3.31%	15.10%
	2012	25.14%	18.85%	1.65%	1.09%
	2013	17.44%	10.32%	2.75%	12.62%
Sharjah Islamic Bank	2008	-1.23%	4.08%	2.75%	13.48%
	2009	15.24%	1.43%	2.35%	9.49%
	2010	20.42%	17.09%	2.02%	11.09%
	2011	-	-	4.26%	5.57%
	2012	2.82%	-27.15%	3.74%	6.10%
	2013	4.34%	-17.41%	3.48%	6.13%
Sharjah Islamic Bank	2014	6.40%	12.01%	2.90%	5.70%
	2012	3.29%	17.20%	2.60%	6.12%
	2013	18.65%	-14.67%	2.46%	6.77%
	2014	19.70%	17.20%	2.80%	8.22%

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