

Bankruptcy and Sustainability: A Conceptual Review on Islamic Banking Industry

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Abstract

Purpose: The purpose of this paper is to access the sustainability profile of Islamic banking industry and to proposed methods for achieving it.

Design/methodology/approach: The approach used in this study is to first select an appropriate bankruptcy evaluation model for Islamic banking industry, while bankruptcy is being used as a proxy for measuring economic sustainability. Because generally it is considered that bankrupt banks have weak, while non-bankrupt banks have strong economic sustainability. Moreover, ANOVA and Regression tests are proposed to examine the significance and correlations of independent variables with bankruptcy / sustainability of Islamic banking industry.

Findings: The studies conducted on Islamic banks sustainability and bankruptcy are found scanty in the literature. However, this paper identified the significance of achieving strong sustainability of banking industry and linked banking activities with the success of financial system and vice versa. Secondly, this study highlighted some of the earlier bankruptcy evaluation models and also proposed proxies for measuring economic sustainability. The bankruptcy literature suggested that, Altman model for service firms is the most appropriate model for evaluating economic sustainability of Islamic banking industry. Thirdly, this study illuminated the importance and consequences of comparative bankruptcy study and also the importance of identifying the key performance indicators that effects the sustainability profile of Islamic banking industry.

Research limitations/implications: Sustainability is a broader concept that deals with social, environmental, and economic aspects. However, environmental and social sustainability dimensions of Islamic banking industry are not discussed in this paper.

Practical implication: The findings of the paper may have serious practical implications on the current working framework of Islamic banking industry. Moreover, this study may also serve as a launching pad in the process of developing an Islamic banking sustainability continuum model.

Originality/value: The study is viable for drawing the attention to a rather neglected issue in Islamic banking, and also offers surveillance to resolve the issue.

Keywords: Financial Characteristics, Performance Indicators, Bankruptcy, Sustainability

Paper Type: Conceptual review paper

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Introduction

The financial crisis of 2007-2008 shed serious doubts on the prudential regulations and proper working nature of banking industry including both the Islamic and conventional banking industries. Nowadays, maintaining strong sustainability becomes obligatory and is considered no more optional, however, the ratio of organizations that practically achieves strong sustainability is still considered very low (Leon, 2001). Complying with the issue of sustainability the discussion on sustainable banking is pioneered by global alliance for banking on values the GABV^[i], the GABV is an independent network of banks incorporated in 2011 with the sole aim to serve people and communities by providing sustainable banking. Over the period of time, the concept of sustainability revolved and its meaning transformed from only achieving higher profitability towards achieving the social and environmental objectives of the projects as well, and this concept is termed as the corporate social responsibility the CSR.

The sustainable development of the economy is ever more depended on the effective banking system of the country, as the banking industry holds the central position in the economy (Jeucken *et-al.*, 1999; Brown, 2003; Safiullah, 2010). However, the central role of banking industry is extra urging it to perform well, because its failure will not only halt the growth of banking industry, but additionally, can deteriorate the overall country's socio economic development up to a large scale, specially where the dominance ratio of banking industry in the economy is very significant (Swamy, 2014). Moreover, the importance and linkage of banking industry to the world economy can be traced to the subprime financial crisis, in which the world economy suffered due to the collapse of large world's banks like, Citi group New York, Lehman brother's investment banking, and Anglo Irish banks. Rashid *et-al.*, (2009) said that, as the banking activities are affecting the overall flow of world financial system therefore, regular and effective monitoring of banking industry becomes vital now.

The meaning and measuring of sustainability is not a new concept for the banking industry, as every banks has its own internal sustainability maintaining strategies, the famous example is about the CAMELS rating technique i.e. capital adequacy, asset quality, management quality, earnings, liquidity and sensitivity to market risk. CAMELS' technique is the best onsite performance monitoring technique which provide necessary information to the management (Kumar *et-al.*, 2008). On the other hand, there are some external elements and players as well who measures the sustainability of financial institutions and provide assistance regarding attaining it. The common example is about financial stability board the FSB ^[ii]. The FSB was established in 2009 after the subprime crisis of 2008 as a successor of financial stability forum the (FSF). However, the set role of the FSB is to monitor and provide assistance to the world financial institutions.

The point of discussion is that, despite of having available internal and external sustainability measurements and techniques still financial distresses and deterioration in the financial performance of banking industry is seen. Chapra (2008) said that the world has seen more than 100 financial crises in the last four decades, almost every part of the world went under its affects. However, the recent subprime financial crisis of 2007-2008 is considered the most detrimental ever. Husna *et-al.*, (2012) said that, in subprime crisis of 2007-2008 the major Islamic banks such as, Dubai Islamic bank and Noor Islamic bank of Dubai, Kuwait finance house of Kuwait, al-Hilal bank of Abu Dhabi, and al-Rajhi bank of Saudi Arabia were affected by the problem of liquidity. Moreover, the financial performance of Islamic banking industry also deteriorated during the financial crisis of 1998-1999 (Yudistra, 2004). On the other hands, some theoretical studies are with the

view that, Islamic banking industry can minimize the effects of financial crisis (Derbel et-al., 2011; Magd et-al., 2014).

Looking at the current banking industry the two existing rivals are Islamic and conventional banking industries, and maintaining strong sustainability is obligatory to the survival of both the rivals. However, the low market share of Islamic banking industry is extra cautioning it to maintain even strong sustainability, as currently Islamic banking Industry retained less than 1% of the total global banking share (Beck et-al., 2013; Isaac et-al., 2014). Cihak et-al., (2010) illuminated that, the existing market share of Islamic banking industry does not have a significant impact on the financial strengths of conventional banking industry, moreover, the prudential regulations of Islamic banking industry are also not very satisfactory. Husna et-al., (2012) said Al-Taqwa bank of Bahamas and Faisal Islamic bank in UK were closed due to the problems of prudential regulation.

Table 1: Share of Islamic Banks (IB) and Conventional Banks (CB) of the Total Banking Assets.

No	Country	IB share (%)	CB share (%)
1	Saudi Arabia	53.0	47.0
2	Malaysia	20.0	80.0
3	U.A.E	17.0	83.0
4	Kuwait	31.0	69.0
5	Qatar	24.0	76.0
6	Turkey	06.0	94.0
7	Bahrain	27.0	73.0
8	Indonesia	05.0	95.0
9	Iraq	25.0	75.0
10	Yemen	30.0	70.0
11	Egypt	04.0	96.0
12	Algeria	01.0	99.0
13	Tunisia	02.0	98.0
14	Lebanon	01.0	99.0
15	Syria	04.0	96.0
16	Jordan	12.0	88.0
17	Average Share	16.0	84.0

Source: World Islamic bank competitiveness report year (2011-2012) and (2013-2014)

Table 1 is showing the division of country's banking assets into Islamic and conventional banking share for 16 Islamic banking countries. From the above table Saudi Arabia, Yemen, and Kuwait possess a significant share on Islamic banking with 47 percent, 30 percent, and 31 percent respectively. However, Bahrain, Qatar, and Malaysia, possess about 27 percent, 24 percent, and 20 percent country's banking assets as an Islamic. However, the per country average of Islamic and conventional banking assets portion is about 16: 84.

Table 2: Compound annual growth rate of Islamic banking industry by key performance indicators (%)

S.N	KPI	CAGR (2004-2007) %	CAGR (2007-2011) %	Decline %
1	CAGR (Assets)	74.01	16.06	57.95
2	CAGR (Financing)	71.09	16.00	55.90
3	CAGR (Deposit)	73.03	17.07	55.96
4	CAGR (Equity)	104.3	09.08	94.05
5	CAGR (Net profit)	127.0	-05.49	132.49
6	Average (KPI)	89.886	10.544	79.342

Source: The banker, KFHR, Bloomberg, Islamic financial service industry stability report (2013) page.27.

The above table 2 shows the cumulative annual growth rate (2004-2007) & (2007-2011) of global Islamic banking industry by key performance indicators i.e. assets CAGR, financing CAGR, deposit CAGR, equity CAGR, and net profit CAGR. A significant decline is evident in all key performance indicators, for instance, the decline in net profit CAGR is recorded with 132.49 percent, followed by equity CAGR, assets CAGR, deposits CAGR and financing CAGR with 94.05 percent, 57.95 percent, 55.96 percent and 55.90 percent respectively. However, the average decline in overall key performance indicators is recorded with 79.342 percent for the period (2004-2011)

Table 3: Compound annual growth rate (Assets) % of Islamic banks

S.N	Country	CAGR (2006-2010) %	CAGR (2008-2012) %	Decline %
1	Bahrain	22.0	02.0	20.0
2	Kuwait	22.0	06.0	16.0
3	Saudi Arabia	19.0	11.0	08.0
4	Qatar	39.0	31.0	08.0
5	UAE	16.0	14.0	02.0
6	Turkey	33.0	29.0	04.0
7	Malaysia	19.5	20.0	00.0
8	Average	24.32	16.14	8.18

Source: World Islamic bank competitiveness report year 2013/2014

Table 3 is showing the CAGR (assets) of Major Islamic banking countries for the period 2006-2010. A significant decline in the CAGR of major Islamic banking countries can be seen from the table e.g. 20 percent by Bahrain followed by Kuwait with 16 percent and that of Saudi Arabia by 8 percent. The average per country decline in CAGR is recorded with 8 percent. More importantly Islamic banking industry is considered as an asset back financing (Kaleem, 2000), however, a significant decline in CAGR assets is evident from the table 3

The point of attention here is that, the banking industry holds a vital position inside any economy and the dependency of efficient financial system is ever more dependent on the proper working of banking industries and vice versa. More importantly, the identified

deterioration in major KPI's of Islamic banking industry can lead to the collapse of financial systems especially in those countries where the dominance of Islamic banking industry in the economy is very significant. Therefore, the above findings legitimized the arguments to question and diagnose the economic sustainability of Islamic banking industry.

Sustainability Dimensions for Banks

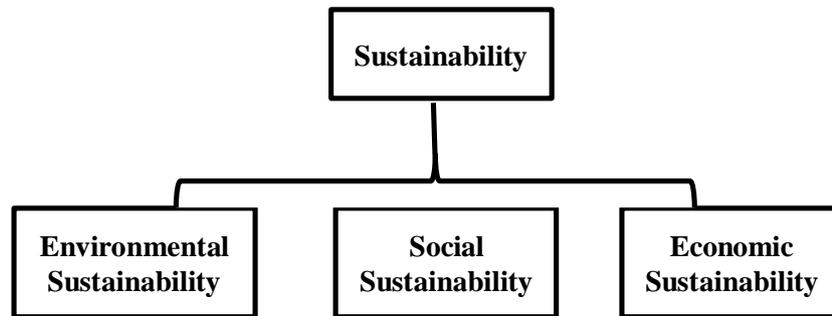


Figure 1: Understanding the concept of sustainability

Social sustainability dimension for banking industry

The social sustainability of banking industry deals with minimizing the impact of banking activities on the society. For instance, to achieve social sustainability the banking industry needs to develop ethical standards of equality while lending to small entrepreneurs, middle business and to the large businesses. Besides the ethical lending by the banks, the social sustainability of banking industry also deals with the active involvement of banking staff to take active part in community fund raising, charity, and other philanthropic work as well.

Environment sustainability dimension for banking industry

Environmental sustainability of banks deals with avoiding and minimizing the effects of those banking activities that has negative impact on the environment. The banks can achieve environmental sustainability by avoiding funds to those organizations whose businesses have negative impact on the green environment. On the other hand, the banks can grant funds to those organizations that are involved in renewable energy products and programs. In order, to measure environmental and social sustainability there are some key performance indicators identified by global reporting initiative the GRI [iii]. However, social and environmental sustainability is beyond the scope of this study.

Economic sustainability dimension for banking industry

Economic sustainability of banks deals with the ability of business in maintaining its high earnings along with successful continuation of business activities in the longer run of business cycle. Generally economic sustainability deals with micro, macro, and industry specific factors. For achieving strong economic sustainability the following questions should be addressed.

- 1: where is the business standing today?
- 2: where is the business going in future?
- 3: how is the business going to get there?

4: how to inline key performance indicators?

The different nature of businesses allow them to adopt a different type of strategy and techniques for addressing and attaining economic sustainability. For instance, the sustainability of NGO's depends upon the availability of funds, however, for manufacturing firms the KPI's like profitability, liquidity, insolvency, productivity etc. are considered as the pivotal elements in maintaining strong economic sustainability (Leon, 2001)

How to Measure Economic Sustainability?

The sustainability measurement differs from organization to organization, therefore, identifying the core KPI's for an organizations is very vital for developing an efficient sustainability diagnosing model (Leon, 2001). Rennings et-al., (1997) said that sustainability can be measured by dividing it into two sets i.e. strong sustainability and weak sustainability.

Overview of Islamic Banking Industry Worldwide

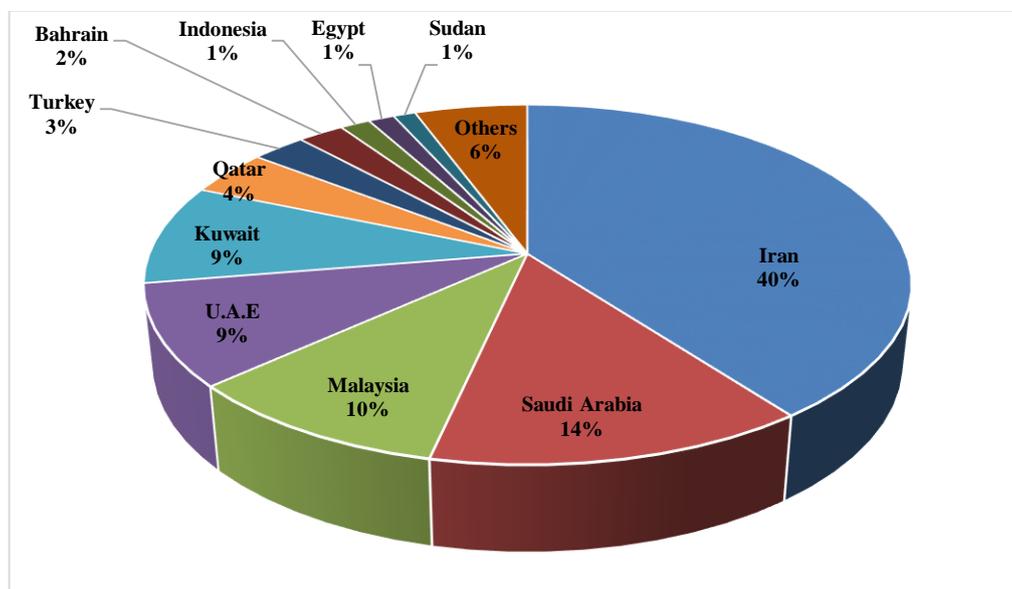


Figure 2: Overview of Islamic banking industry worldwide.

Source: The banker, KFHR, Bloomberg, Islamic financial service industry stability report (2013) page.26

Source: Global Islamic forum 2012: Bridging economies introductory session and GIFF report by KFH .page. 5

The above figure 2 shows the breakdown of global Islamic banking assets worldwide in percentage. Iran is the market leader in Islamic banking industry by retaining 40 percent of the global Islamic banking assets followed by Saudi Arabia, Malaysia, U.A.E. and Kuwait with 14 percent, 10 percent, 9 percent and 9 percent respectively. However, countries like Turkey, Bahrain, Indonesia, Egypt and Sudan retains about 1 percent global Islamic banking assets share.

Transformation of Islamic Banking Industry Worldwide

The journey of Islamic banking on large scale started with the operationalization of Islamic development banks in 1973 and Dubai Islamic banks in 1975. The Islamic development bank was started with the objective to obtain the socio economic development in the Muslim countries.

Initially Islamic banking grew rapidly in the South East Asian countries, but lately in 1990's the growth momentum transferred towards the Gulf States, the Gulf countries held about 74 per cent of the global Islamic banking assets in the year 2002 (Iqbal et-al., 2005). (Chenguel, 2014; Usman et-al., 2012) said that started from a small scale Islamic banking rified successful across the world to more than 60 countries of the world presently. Olson et-al., (2008) said that, the large world's banks like BNP Paribas, Citicorp, and Commerzbank also acknowledged the importance of Islamic banking industry, and therefore, started their branches that offer Islamic banking.

The journey of Islamic banking continued successfully from the last four decades, in terms of market penetration and size as well. Abdullah et-al., (2012) said the countries like Sudan and Iran has converted their entire banking system to Islamic banking system. Moreover, Islamic banking industry became popular in the non-Muslims countries as well. Chong et-al., (2009) said the first full fledged Islamic banks on non-Muslim land was Islamic banks of Britain started in august 2004.

Evaluation of Islamic Banking Industry in the World's Top Five Islamic Banking Countries by Global Banking Assets***Iran***

After the Iranian revolution of 1979 the entire banking system of Iran was converted into Islamic. During the process of Islamization thirty four banks of the Iran were merged into six commercial and three specialized banks. However, for the first time the term interest was substituted with maximum service charges of 4 per cent. Furthermore, the term "interest on deposit" was replaced with guaranteed minimum profit of 4-8 per cent (Anwar, 1992).

In Iran the law of "interest free banking" was introduced in 1984 to overcome the flaws in fundamentals of banking industry. Following "interest free banking law "Some different Islamic baking concept like (Mosaqaat), (Muzariah), (Mudarabah), (Qard-al-Hassan) and (Gala) were also introduced by Iran (Anwar, 1992). Presently Iran is the market leader in global Islamic banking assets with 43 per cent of global Islamic banking assets (Global Islamic forum 2012). According to the central bank of Iran total of 31 Islamic banks comprised of different sectors are operating in Iran, details of them are shows in the table 4.

Table 4: List of Islamic banks operating in Iran (Central bank of Iran)

Serial No	Bank Name
Commercial Government – Owned Banks	
1	Post Bank of Iran
2	Bank Melli Iran
3	Bank Sepah
Specialized Government Banks	
4	Cooperative Development Bank
5	Bank of Industry & Mine

6	Export Development Bank of Iran
7	Bank Keshavarzi
8	Bank Maskan
Non-Government-Owned Banks	
9	Karafarin Bank
10	Sina Bank
11	Pasargad Bank
12	Saman Bank
13	Ansar Bank
14	Sarmayeh Bank
16	Hekmat Iranian Bank
17	Shahr Bank
18	Mellat Bank
19	Bank Saderat Iran
20	Ghavamin Bank
21	Iran Zamin Bank
22	Tejarat Bank
23	Eghtesad Novin Bank
24	Parsian Bank
25	Day bank
26	Refah Bank
27	Khavarmianeh Bank
28	Gardeshgari Bank
Gharzolhasaneh Banks	
29	Gharzolhasaneh Resalat Bank
30	Gharzolhasaneh Mehr Iran Bank
Near-bank	
31	Credit Institution for Development

Source: <http://www.cbi.ir/simplelist/1462.aspx>

Saudi Arabia

In 1970 the members of King Abdul Aziz University Makah Saudi Arabia held a conference on Islamic economic, as an out come to that conference, the first Islamic bank with the name Islamic development bank started its operation in 1973. The role of IDB was set to support the member countries of OIC in term of socio economic development and infrastructure building. According to (New Horizon, 2008) the IDP provided 10 billion dollars fund for socio economic development in the OIC member's countries. Saudi Arabia is the main contributor of IDB poverty elevation fund with 28 percent followed by Libya 12 percent and Iran with 9 percent respectively. The legitimization of any financial institution in Saudi Arabia is done by the Shariah supervisory board, the board is very independent in its nature compared to the boards of Pakistan, Iran Malaysia and some other Muslim countries where the Shariah boards are controlled by the central banks of the countries.

The main problem and challenges for Islamic banking in Saudi Arabia are the strict old rules and regulation formed by Saudi Arabian monetary agency the SAMA [iv] in 1970's which are still strictly followed by the banking industry in Saudi Arabia. According to those regulations, no foreign banks can start its operation in Saudi Arabia, although a little relaxation was given by SAMA in 2003 when it allowed few foreign banks to start

operation in Saudi Arabia. However, the legitimization and licensing of foreign banks was again suspended for an undetermined period. The main opportunities for Islamic banking in Saudi Arabia lies in the projects associated with large oil reserves, as some successful projects carried out by Islamic banks in Saudi Arabia brought the Islamic banking reserved a level up (New horizon, 2008).

Table 5: List of Islamic banks operating in Saudi Arabia

Serial No.	Bank Name
1	Bank Al Bilad
2	Alinma Bank
3	Al Baraka Investment & Development Co
4	National Commercial Bank
5	ICIEC
6	Islamic Development Bank
7	Al Rajhi Banking & Investment Corporation
8	Bank Al-Jazeera

Source:

http://wiki.islamicfinance.de/index.php/Islamic_financial_institutions#Saudi_Arabia
<http://www.globalbankingandfinance.com/list-of-islamic-banks-in-saudi-arabia/>

Malaysia

Kaleem (2000) said that the concept of Islamic banking in Malaysia is traced back to 1969 with the operation of a domestic Islamic investment institution called the pilgrims management and fund Board Lembaga Tabung Haji. Muda et-al., (2013) said that with dual banking system currently Malaysia has seventeen Islamic banks composed of 11 domestic and 6 foreign banks, the ratio of foreign Islamic banks is very high in Malaysia. In Malaysia legitimization of any new product and service is subjected to the Shariah supervisory board which is governed by Bank Negara the central bank of Malaysia.

Samad et-al., (1999) identified some problem and challenges faced by Islamic banking in Malaysia, the study argued that, the product and services offered by Malaysian Islamic banks are not fully embraced by the customers, furthermore, the study illuminated the main reason of not embracing Islamic products and service is the lack of knowledgeable workers and intellectuals in Malaysian Islamic banking industry.

Some other challenges faced by Malaysian Islamic banking industry are the continuation of business concepts like the (Bay-al-Dayn) and (Dawa to ajjal) on which many Islamic scholars of the world disagree with Malaysia scholars for declaring such concept as Islamic (Haroon, 2000). Chong (2009) completed a study on profit and loss sharing of Islamic and conventional banking system in Malaysia and reported that there is no difference among the profit and loss sharing process of Islamic as well as conventional banking system in Malaysia. Furthermore, the study illuminated that the Islamic banking growth in Malaysia did not take place due to efficient services offered by Islamic banks but it is just a result of Islamic banking resurgence worldwide.

Table 6: List of Islamic banks operating in Malaysia (Bank Negara)

Serial No	Bank Name
1	Standard Chartered Saadiq Berhad
2	Al Rajhi Banking & Investment Corporation (Malaysia) Berhad
3	Public Islamic Bank Berhad
4	Bank Islam Malaysia Berhad
5	Am Islamic Bank Berhad
6	Kuwait Finance House (Malaysia) Berhad
7	Asian Finance Bank Berhad
8	RHB Islamic Bank Berhad
9	May bank Islamic Berhad
10	Bank Muamalat Malaysia Berhad
11	HSBC Ammnah Malaysia Berhad
12	OCBC Al-Amin Bank Berhad
13	Hong Leong Islamic Bank Berhad
14	Alliance Islamic Bank Berhad
15	CIMB Islamic Bank Berhad
16	Affin Islamic Bank Berhad
International Islamic banks In Malaysia	
1	PT. Bank Shariah Muamalat Indonesia, Tbk
2	Al-khair International Islamic Bank Bhd
3	Al Rajhi Banking & Investment Corporation
4	Deutsche Bank Aktiengesellschaft

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=0>

U.A.E

Dubai Islamic bank was the first bank of UAE which started its operation in 1975, since than six full fledged Islamic banks are working in UAE. However, the Islamic banking industry of UAE retains 17 percent of the country total banking asset's portion. The centralization of Zakat process is initiated by United Arab Emirates for the first time, according to that, every Islamic bank has to pay 2.5 percent out of its net operating capital. United Arab Emirate is the market leader in Sukuk with 34 per cent of global Sukuk share (New horizon, 2008).

Table 7: List of Islamic banks operating in U.A.E.

Serial No.	Bank Name
1	Islamic Commercial Bank
2	Abu Dhabi Islamic Bank
3	Dubai Islamic Bank
4	Emirates Islamic Bank
5	Noor Islamic Bank
6	Sharjah Islamic Bank
7	Al Hilal Bank

Source: http://en.wikipedia.org/wiki/List_of_banks_in_the_Arab_world#Islamic_banks_2

Kuwait

Kuwait finance house was the first Islamic bank of Kuwait which started its operation in 1977. KFH is considered as the market leader in research and innovation relating to Islamic banking. KFH has extended its network to Malaysia, Bahrain, and Turkey etc. Furthermore, the Kuwait finance house is working on some important projects relating to the entrance of Europe through Turkey (New horizon, 2008). Kuwait Islamic banking industry retains 31 percent share out of the country’s total banking assets. Hartley (2014) said that Islamic banking in Kuwait portrayed 9 percent growth rate, and considering such efficient growth rate Kuwait can be the market leader in Islamic banking in coming future.

Table 8: List of Islamic banks operating in Kuwait

Serial No.	Bank Name
1	Al Ahli United Bank
2	Al-Rajhi Bank of Kuwait
3	Kuwait Finance House
4	International Bank of Kuwait
5	Warba Bank
6	Boubyan Bank

Source: http://wiki.islamicfinance.de/index.php/Islamic_financial_institutions#Kuwait
<http://www.globalbankingandfinance.com/list-of-islamic-banks-in-kuwait/>

Novelty

Lens 1: This pioneer study highlighted the rather neglected area in Islamic banking literature therefore, this study opt to examine and diagnose the sustainability profile of Islamic banking industry, and this will open new discussion on the important topic which is associated with the survival of Islamic banking industry.

Lens 2: This study attempt to diagnose the sustainability profile of Islamic banking industry by using conventional bankruptcy model as a proxy for measuring Islamic banking sustainability. However, this study may also serve a launching pad in the process of developing a separate Islamic banking sustainability continuum model. Which is yet to be developed.

Literature Review

Literature available on Islamic banking identified that, financial characteristics like profitability, liquidity, insolvency, productivity are used with various different concepts in Islamic banking e.g. Islamic banks performance on cross country, Islamic bank’s performance on single country basis, on foreign vs. domestic Islamic banks perspective, on the basis of Islamic vs. conventional bank’s performance, Islamic vs. Islamic banks performance, and determinants of Islamic bank’s profitability. However studies relating to Islamic banks sustainability are found scanty in the literature.

Role of performance indicators in measuring Islamic banks performance

Islamic banks performance is studied and examined from different perspective using different performance indicators means the ratios. Hamid et-al., (2011) said that performance indicators are the pivotal factor in evaluating the sustainably profile of Islamic banking industry. Bashir (2003) explained that performance indicators depicts the reals financial position of banks because these indicators are constructed from financial

data that are taken from company's own annual reports. Kakakhel et-al., (2013) conducted a study on Islamic banking and argues that performance indicators can be divided in four broad type i.e.

1: Liquidity, 2: Profitability, 3: Activity ratio 4: Insolvency.

Furthermore the study explained the different means of calculating profitability are.

Profitability

- 1: Return on advances
- 2: Interest profit margin
- 3: Return on assets
- 4: Net profit margin
- 5: Return on equity

According to the study different means of attaining liquidity ratios are.

Liquidity

- 1: Advances to deposits ratio
- 2: Networking capital
- 3: Cash ratio
- 4: Current ratio

The study also highlighted some ways of achieving insolvency ratios.

Insolvency

- 1: Debt to equity ratio
- 2: Debt to assets ratio
- 3: Leverage ratio

Ansari et-al., (2011) examined the performance of Islamic vs. Conventional banking system in Pakistan and proposed different performance indicators in measuring Islamic and conventional banks performance.

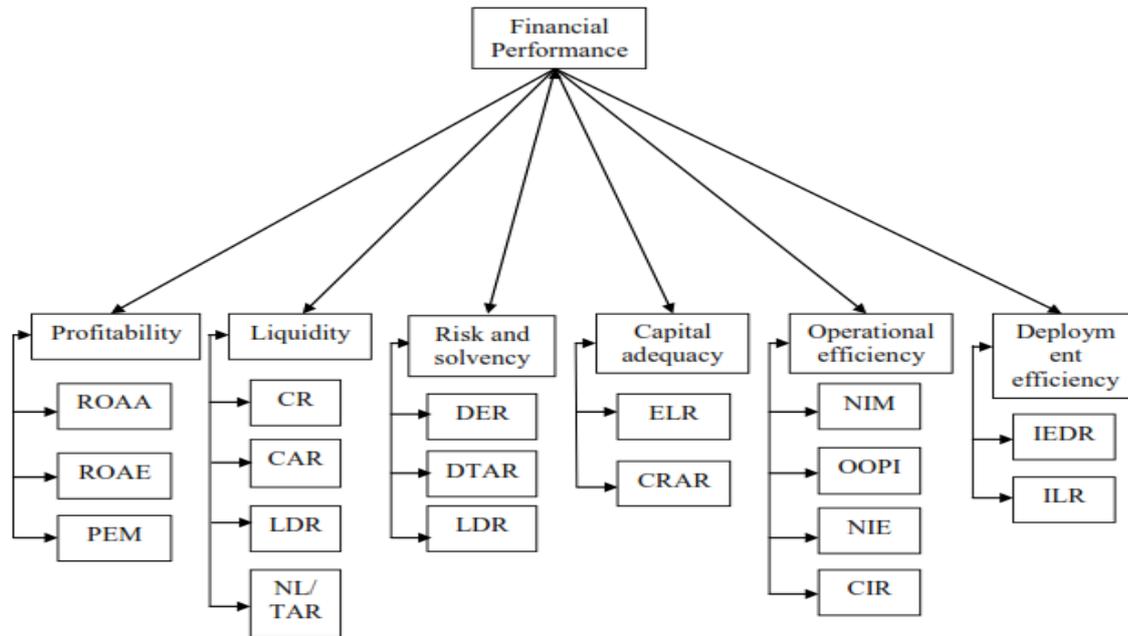


Figure 3: performance indicators in measuring Islamic banks performance (adopted from Ansari et-al., 2011)

Profitability ratios

- 1: ROAE: Return on average equity
- 2: ROAA: Return on average assets
- 3: PEM: Profit expense margin

Liquidity ratios

- 1: LDR: Loan deposit ratio
- 2: CR: Current Ratio
- 3: NLTA: Net loans/ total assets
- 4: CAR: Current asset ratio

Risk and solvency ratios

- 1: DTAR: Total debt/ total assets
- 2: DER: Debt to equity ratios
- 3: LDR: Loan deposit ratios

Capital adequacy ratios

- 1: ELR: equity/ liabilities ratios = Average equity/ average liabilities
- 2: CRAR: capital risk asset ratio

Operational ratios

- 1: CIR: Cost / income ratio
- 2: OOP: other operating income/ total assets
- 3: NIE: Net interest income / average assets
- 4: NIM: Net interest margin = net markup & interest income / average assets

Deployment ratios

- 1: ILR: Investment / liability ratio
- 2: IEDR: Investment / Equity & deposit = total investment / total equity + total deposits.

Role of performance indicators in measuring Islamic banks performance during the financial crisis

Said (2013) used performance indicators to measure the technical and scale efficiency of Islamic banking industry in MENA region after the financial crises of (2007-2009). The study reported that financial performance of Islamic banks in MENA and North African countries as a result of the crisis found technically inefficient. The study held underdeveloped banking system responsible for the deterioration in the financial performance of Islamic banking industry in MENA and North African countries. Furthermore, the study illuminated that Islamic banks of MENA and North African countries were unable to find the allocation of resources for input and output mix compared to other countries of GCC.

Beck et-al., (2013) examined the financial performance of Islamic vs. conventional banking industry after the subprime crisis of 2007-2008. The results showed that Islamic banks are more cost effective, better capitalized and possess higher asset quality ratios. Furthermore, a significant variation in the financial performance of small and large Islamic banks recorded during the financial crisis. The overall sample of Islamic banks found to be more shock observer than that of conventional banks during the financial crisis.

Bourkhis et-al., (2013) measures the effect of global financial crisis on the financial health of Islamic and conventional banks by taking a sample of 34 conventional and 34 Islamic banks from 16 different countries. For empirical findings the study used different performance indicators i.e. Liquidity, profitability, capital adequacy, asset quality etc. However, the results revealed that there is no significant difference of the crisis on the financial health of both Islamic and conventional banks.

Karim et-al., (2012) studied the impact of subprime mortgage crisis on Islamic banking and finance in Malaysia by using different performance indicators such as Islamic bank deposits and stock market indexes. The results revealed that, both Islamic stock market and Islamic financing are co-integrated with macro variable before and after the crisis. However, no integration found between macro-economic variables and Islamic deposits before and after the financial crisis. Furthermore, the study alluded that Islamic stock market and Islamic financing is vulnerable to the financial crisis.

Hidayat et-al., (2012) used financial ratios to measure the effect of global financial crisis 2007-2008 on Islamic banking industry in Bahrain. The regression results revealed that in bank's specific factors the loan to total assets ratio, loan to equity ratio and loan to overhead expense ratio found significant to the financial health of Bahrain Islamic banks during the financial crisis. Furthermore, the study reported that Islamic banks performance during the financial crisis was unaffected, however, the financial performance of Bahrain Islamic banks affected after the financial crisis.

Shafique et-al., (2008) tested the performance of Islamic vs. conventional banking industry during the subprime financial crisis. The results illuminated that, Islamic banks suffered due to financial crisis, however the affect was minimal on the financial health of Islamic banks compared to conventional banks. Furthermore, the study reported that the less riskiness of Islamic banks compared to conventional banks is due to interest free banking by Islamic banking industry. The study also claimed that because of more stability in financial crisis the demand of Islamic banking increased in the western world.

Kaleem (2000) examined the effect of global financial crisis (1997-1998) on the financial health of Islamic and conventional banking system in Malaysia using various performance indicators. However, the results revealed that, Islamic banks are more crisis proofed than that of conventional banking system in Malaysia due to asset backed financing.

Performance indicators and cross country Islamic banks financial performance

Said (2013) used performance indicators to measure the technical efficiency of Islamic banks in MENA region for the period (2007-2009). The study summed that, Islamic banks of MENA regions are unable to find the allocation of resources among the input and output mix compared to other countries of GCC.

Smaoui et-al., (2011) used performance indicators to measure profitability of 44 Islamic banks in the Gulf cooperation council (GCC) region for the period (1995-2009). The study found that, higher capital, better asset management, and large bank size has a significant positive relation on Islamic banks profitability, while higher cost to income ratio leads toward lower profitability of Islamic banking industry. Additionally the study reported that, auspicious macro-economic condition has positive relation on Islamic banks profitability.

Yudistra (2004) investigated the cross region performance for the set of 18 Middle Eastern and non-Middle Eastern Islamic banks for the period (1997-2000). Data envelopment analysis DEA techniques was adopted to measure the technical and scale efficiency of Islamic banks. The findings shows that, the Middle Eastern sample of Islamic banks is less efficient than the non-Middle Eastern sample of Islamic banks.

Hassan et-al., (2003) conducted a cross-country Islamic banks performance evaluation for the sample of 21 Islamic countries for the period (1994-2001). The study applied many internal and external linked bank performance indicators to found its effect on profitability and efficiency profile of Islamic banking industry. The study found that, capital and loan to asset ratios lead towards higher profitability, while taxes deteriorates profitability of Islamic banks. However, favorable macro macroeconomic conditions enhance the financial performance positively of Islamic banks. Furthermore, the study found that shorts term funding seems to have a positive relation with the profitability, while the size of the bank has negative impact on the profitability.

Zaman et-al., (2001) measured the performance of various Islamic banks globally via products and service offered by Islamic banks. The study found that, the profit rates offered by Islamic banks are the same with interest rates that are offered by conventional banks.

Performance indicators in measuring the profitability determinants for Islamic banks

Abduh et-al., (2013) conducted a study on the difference in the profitability determinants of Islamic banks in Malaysia from the period of (2006-2010). The finding alluded that, in the case of structural variable the banks size, market concentration and market development has positive impact on the Islamic banks profitability. However, in the case of macro-economic factors, inflation has positive relation on the profitability of selected Islamic banks in Malaysia for the period (2006-2010).

Bashir (2003) studied the role of performance indicators in measuring the determinants of Islamic banks profitability across eight Middle Eastern countries for the period (1993-1998). The study considered many internal, external, and banks specific characteristics. The findings illuminated that, loan to assets ratio, high capital to assets ratio and favorable macro environment leads toward high profitability of Islamic banks. However, implicit and explicit taxes negatively affects the profitability of Islamic banks in eight Middle Eastern countries for the period 1993-1998.

Hassan et-al., (2003) examined the role of different performance indicators in measuring profitability of Islamic banks of 21 different country using data from (1994-2001). The study used different internal, external performance indicators to measure its effect on profitability profile of Islamic banking industry. The results confirmed the previous

findings that loan to asset ratio leads towards higher profitability and tax leads towards lower profitability in Islamic banks of selected 21 countries.

Bashir (1999) studied the role of total assets on firm's profitability, for empirical investigation the study used financial data from two Sudanese banks. The findings shows that, large bank size in term of total assets has positive relationship with Islamic banks profitability, however, in the case of minimal bank size the relationship with Islamic banks profitability is found negative. Moreover, the study concluded that large bank size is economically efficient for Islamic banks. However, the findings of this study contradicts with the findings of (Cihak et-al., 2012) which concluded that the stability of Islamic banks decreased when it grows in size, and the financial stability of Islamic banks are found positive when they operated on small scale.

Performance indicators in measuring Islamic vs. Islamic banks performance

Husain et-al., (2012) Using econometric models calculated the efficiency and profitability of Islamic banking in Malaysia for the period (2004-2008). For empirical study a sample of 9 Islamic banks was selected. The study indicated that there are a lot of difference in the efficiency and profitability profile of selected Islamic banks. The study reported that, the only banks that profitability is increased every year is of Alliance Islamic Bank BERHAD. Siddique (2008) evaluated the performance of two Islamic banks of Pakistan, i.e. Meezan limited bank, and Al-Baraka bank via profitability ratio, liquidity ratio, and solvency ratio, the study found that, most of the studies on Islamic banking performance is limited to single country base and large scale study is required. The study found the performance of both selected Islamic banks satisfactory in term of its profitability, liquidity, and solvency. Furthermore, the study argued that Islamic banks cannot easily enter into Europe and USA, without finding a way to guarantee the depositors because guaranteeing a fix sum of return on deposits is the regulatory compulsion for granting license of commencement for banks. Saleh et-al., (2006) evaluated the performance of two Islamic banks of Jordan namely Jordan Islamic Bank for finance and Investment (JIBFI) and Islamic international Arab bank (IIAB). The study used different performance indicators to evaluate the financial performance of two Jordanian banks in term of Profit maximization, capital structure, and liquidity management. The study found that, over the period of time the financial efficiency of the banks has increased but both the banks are depending on short term investments. Furthermore, the study found that Jordan Islamic Bank for finance and Investment (JIBFI) is more profitable compared to Islamic international Arab bank (IIAB). Sarker (1999) investigated the performance of Islamic banking industry in Bangladesh, the study used different performance indicators, i.e. profit utilization test, investment opportunity utilization test, and project efficiency tests. The study suggested that, in order to improve the liquidity of Islamic banking industry Islamic banks has to innovate new products and its own framework. The study also found that under the conventional banking framework the efficiency of Islamic banks is deteriorating. To improve profitability the study proposed that Islamic banks has to adopt the PLS fully and has to adopt the full framework as Islamic.

Turn (1996) conducted a study to investigate the claim that Islamic banks provide higher profitability at lower cost and entitled higher performance. The profitability analysis & stock analysis of Bahrain Islamic bank BIB is carried out. After the detailed examination, the profitability claim at lower cost is certified and endorsed by the researcher.

Performance indicators and foreign vs. domestic Islamic banks performance

Muda et-al., (2013) compared the performance of domestic vs. foreign Islamic banks in Malaysia using performance indicators. The study found that, foreign Islamic banks are more profitable, a clear difference between domestic and foreign Islamic banks profitability determinants was noticed. The study also concluded that, the profitability of domestic banks is affected by the global financial crisis, however, in case of foreign Islamic banks the global financial crisis did not affected its profitability.

Sufian (2007) measured the efficiency of Foreign and domestic Islamic banks in Malaysia using DEA techniques. The study suggested that the performance of Islamic banking industry in Malaysia declined in year 2002, however, a slightly recovery noticed in the year 2003 and 2004. The study reported that, domestic Islamic banks are more efficient compared to foreign Islamic banks.

Bashir (2003) studied the profitability and efficiency of 14 Islamic from eight middle Easter countries banks using different performance indicators. The sample of study comprised of foreign and domestic Islamic banks. Performance indicators used in the study comprised of banks specific variables, macro-economic variables, and the structural variables. The study eluded that, large loan to asset ratio and high leverage ratios lead to higher profitability. Furthermore, the study reported that, foreign owned banks are more profitable than that of the domestic Islamic banks in the selected sample of countries.

Performance indicators in measuring Islamic vs. conventional banks performance

Kakakhel et-al., (2013) studied the performance of two conventional banks MCB and HBL along with the set of two Islamic banks Dubai Islamic bank and Meezan bank of Pakistan over the period 2008-2010. The study used performance indicators like profitability, liquidity, activity ratio and insolvency ratio. The findings of the study alluded that, conventional banks are more profitable than Islamic banks in Pakistan. According to the study, the liquidity of Islamic banks is found better to conventional banking in Pakistan. Moreover, the study illuminated that, the asset turnover ratio and insolvency ratios of Islamic banks are found better to conventional banking in Pakistan. However, looking at the overall performance conventional banks outperformed Islamic banking industry

Husna et-al., (2012) reported that, more specific models are used in finding the financial distress of conventional banks. However, no specific bankruptcy models in case of Islamic banks are developed. In case of Islamic banking performance evaluation the conventional banking models are used with as a whole or sometime with little modifications. The study predicted that, Islamic banks are less risky and more liquid, compared to conventional banks. Furthermore, the study argues that, Islamic banks are just Islamizing the conventional banking products instead of innovating new products based on Sharia laws. The study also illuminated that, most of the Islamic banks are providing false financial statement (FFS) to deceive and mislead the customers.

Qureshi et-al., (2012) by using different performance indicators compared the financial and technical performance of Islamic vs. conventional Banks in Pakistan. The study found that, Islamic banks are more cost efficient and less revenue efficient. Furthermore, the study reported that, hybrid banking may not be feasible for the banking industry in Pakistan.

Hanif et-al., (2012) investigated the performance of Islamic vs. conventional banks in Pakistan for the period (2005-2009). A sample of 22 conventional and 5 Islamic banks was used for the study. Total of 9 financial ratios was used to test both banks in regard of its Profitability, liquidity, Risk & solvency. The study shows that, in term of profitability and liquidity the sample of conventional banks performed better than that of Islamic banks,

however, in case of risk and solvency ratios Islamic banks surpassed the sample of conventional banking.

Akhtar et-al., (2011) investigated the liquidity risk management of Islamic vs. conventional banks in Pakistan from the period of 2006-2009 by using 6 different financial ratios. The results revealed, that banks size and networking capital are insignificant in both the banking industries, however, the capital adequacy ratio in conventional banks and return on assets in Islamic banking industry found positive. Furthermore, the most important thing the study illuminated that there is no difference between ROE & ROA in Islamic banking as the accounts in Islamic banks is of investment nature.

Ansari et-al., (2011) performed a comparative analysis of Islamic and conventional banks in Pakistan for the period (2006-2009) using 18 financial ratios. The study reported that Islamic banks are less risky, more liquid and operationally efficient than conventional banks

Hamid et-al., (2011) Measured the financial performance of bank Islam Malaysia Berhad with the group of conventional banks using different financial ratios. The study measured profitability, liquidity, Risk and solvency for both the samples. The study reported that, BIMB bank is less risky and more liquid as compared to conventional banks. However, no major difference is recorded in the profitability of both the sample of Islamic and conventional banks.

Safiullah (2010) opt to check the superiority of 4 Islamic and 3 conventional banks in Bangladesh for the period of 5 years i.e. (2004-2008). The study used different financial ratios in regards of Profitability, liquidity, insolvency, Efficiency and productivity, commitment to economy and community. The result showed that, the Interest free banking i.e. Islamic banking is found superior in business development, profitability, and liquidity.

Chong et-al., (2008) discussed the profit and loss sharing role of Islamic banking industry along with conventional banking industry in Malaysia. The study reported that, only a small portion of Islamic is banking strictly based on PLS mode, moreover, the study illuminated that Islamic banking as whole in Malaysia are not following PLS procedures and are strictly pegged to conventional banks deposit. Furthermore, the study argued that, Islamic and conventional banks are subjected to the same rules and regulation those of conventional banks and the growth in Islamic banking is not due to PLS nature of Islamic banks but due to Islamic resurgence worldwide.

Samad (2004) predicted the performance of Islamic vs. Conventional banks in Bahrain after the post-Gulf war period. The study used 9 financial ratio to evaluate the performance of conventional and Islamic banks in regard of its Profitability, Liquidity risk, and credit risk. The study found that, the profitability and liquidity ratio are more or less the same in both the samples. However, an evident difference in the credit rick position is recorded while comparing both the samples.

Hassoune (2002) evaluated the performance of Islamic & conventional banks through financial ratios and found that, Islamic banks are more profitable than its contemporary conventional banking rival. The study also revealed that, instead of higher profitability yet Islamic banks are not the full package for the world's customer, because there are a lot of question marks on its liquidity, concentration risk and, operational efficiency.

Selection of appropriate bankruptcy model for measuring Islamic banks sustainability

In order to predict bankruptcy of firms and banks many bankruptcy detection models are developed. The pioneer work in the field of bankruptcy done by (Beaver, 1966), his study carried out univariate analysis using accounting ratios. However Beaver's model was criticized on the basis of its univariate nature i.e. it could use only one variable at a time while predicting corporate distress.

Altman (1968) advanced beaver's model by introducing four more famous variables, Altman for the first time used multiple discriminant analysis MDA technique, according to MDA a collective analysis of all variables can be seen. Altman divided the sample in bankrupt and non-bankrupt group, however, the model used financial characteristics i.e. accounting ratio / performance indicators and could predict bankruptcy five year prior to actual bankruptcy. This model became the famous bankruptcy model due to its simple understanding and accuracy. Overall, Altman model was recorded 94% accurate in finding bankruptcy.

In 1972 Deakin used the same four variables those of Beaver's but applied them in different concept i.e. In multivariate perspective and achieved higher accuracy (Kiriakopoulos et-al., 2014)

In 1977 Altman, Haldeman, and Narayanan developed a new Zeta model for diagnosing bankruptcy, the model used seven financial ratios by taking a sample of fifty three failed and fifty eight non failed companies. The Zeta model was reported 96% accurate overall. However Z-score and Zeta models were also criticized on the basis of its limited use only for manufacturing firms.

In 1980 Ohlson tried to offset the limitations of earlier Altman (1968), Altman et-al., (1977) and Beaver's model by introducing logistic regression model for predicting bankruptcy. Ohlson analyzed the model by considering the sample of 105 bankrupt and 2058 non-bankrupt companies.

Then in 2000 Altman wrote a paper in which he made the initial Z-score model functional for service like the banks as well. The coefficients of the variables were change along with the elimination of variable x5 i.e. sales/ Total assets, because the service firms don't have sales. The new Altman z-score model for service firms shapes as.

$$Z = 6.56x1 + 3.26x2 + 6.72x3 + 1.05x4$$

Tsai (2009) Said that features selection is very important step in achieving efficient bankruptcy prediction, furthermore, the study portrayed five well known features selection methods that are used in bankruptcy, i.e. Correlation matrix, t-test, stepwise regression, factor analysis (FA) and principle component analysis (PCA), and neural network.

Mossman (1998) carried out a study to identify the best bankruptcy model out of all the different features available models. The study considered four bankruptcies models based on financial statement data, the division of the models include, cash flow model of (Aziz et-al., 1988), market adjusted return's model of (Clark et-al., 1983), standard deviation model of (Aharony et-al., 1980), and ratios model of (Altman 1968). The results indicated that all the models were statically important one year prior to bankruptcy. However Altman's model was recorded the most effective and efficient model in explaining bankruptcy five year prior to bankruptcy. Pompe et-al., (2005) opt to choose the best bankruptcy model out of all available model, for the purpose, the study took bankruptcy aspect of several small and medium firm and found that ratios models have an enormous power in predicting bankruptcy, the findings of the study endorsed the earlier findings of (Mossman, 1998). Hence from the above bankruptcy literature it is illuminated that

ratios/performance indicator model is the best model for finding bankruptcy of the firm, secondly the best ratios built model is that of Altman's model.

Use of Altman's model in diagnosing bankruptcy

Kyriazopoulos et-al., (2014) predicated the bankruptcy of 6 Greek cooperative banks after the subprime crisis of 2007-2008 by using Altman's model. For further empirical evidence the study used financial data for the period 2001-2009. The study reported that, Altman model to be found very efficient model in bankruptcy prediction of Greece banks, and reported that, the reason of collapse of those banks was due to the problem of direct borrowings from financial market which lead the banks towards the problem of liquidity.

Sharma et-al., (2013) applied Altman model on 36 commercial banks of India, comprised of 20 public sectors and 16 private sector banks. The study placed all the banks in safe zone except two banks i.e. Canara bank, among the public sector and Kotak Mahindra bank, among the private sector banks of India that were found to be in the distress zone. The study reported Altman model 70 percent accurate in predicting financial distress of Indian banking industry. Furthermore, the study reported that, unfortunately instead of utmost accuracy in predicting financial soundness of banking industry still the Altman model is least explored in the field.

Chieng (2013) applied Altman model to 4 distressed and non-distressed Euro-zone banks by taking the data for the period (2005-2010). The study reported that, Altman model has 100 percent accuracy in finding financial distress 5 year prior to failure of banking industry.

Nayak et-al., (2011) used Altman's model to evaluated the performance of public sectors Indian. The study reported Altman model very accurate in finding financial health of public sectors Indian banks. However, the results of Altman model shows that state banks of India has strong sustainability profile and therefore, was ranked at the top in sustainability profile.

Pradhan (2011) applied Altman model in regards of comparison between three banks of Indian i.e. Axis Bank, HDFC bank, and ICICI bank. For empirical evidence the study used financial data for the period (2009-2010). The study alluded that Altman's model is very accurate in predicting bankruptcy of banking industry. Furthermore, the study argued that, 12 month early warning of bankruptcy can caution the management to take alert and quick actions in order to halt the upcoming distress and Altman model is best suited for that.

Mamo (2011) in his PH.D thesis used Altman's model in finding the financial distress of 43 commercial banks in Kenya. The study reported that, in case of failed banks the Altman model is found 80% accurate, however, in case of non-failed banks the accuracy of the model is found 90 percent while predicting financial distress of Kenyans banks.

Chaitanya (2005) use Altman model to measure financial characteristics and bankruptcy of Indian financial Service Industry the (IDBI). The result of the study predicted a possible bankruptcy for IDBI, as the Altman model placed IDBI in the distress zone.

Altman (2000) illuminated that, z-core and Zeta model for bankruptcy has the accuracy of finding financial distress up to 72 percent two year prior to bankruptcy. However, the accuracy of Altman model was claimed at 70 percent five years prior to bankruptcy.

3.10. Can Altman model work in predicting bankruptcy of Islamic banking industry?

From the literature it is almost evident that, Altman model is the best and accurate ratios built model that can predict bankruptcy five year prior to actual bankruptcy and with higher accuracy. However, in a response to the applicability of Altman model on Islamic banking industry it is illuminated that, Altman model is composed of different financial ratios, however, ratios and its concept is being followed the same in Islamic and

conventional banking system (Olson et-al., 2008). The statement seems logical as both of the banks are operating in the same financial environment even in the same regions where the market fundamentals are the same. More importantly, all banks whether Islamic or conventional are working under the designed rules and regulation of the particular country's central banks, and those rules are the same for both are banking industry e.g. The Basel capital requirement and financial reporting rules are same for the banking industries (Olson et-al., 2008; Chong et-al., 2009)

For instance, in Saudi Arabia both the banking system are working under the supervision of SAMA (Saudi Arabian monetary agency). Islamic banking in Pakistan and Iran are also working under the designed policies of country's central banks. However, in some Islamic countries like Malaysia and U.A.E etc. There are Shariah boards which look after Islamic banking activities but still these Shariah boards are bound to abide the rules and regulation designed by central banks largely. Haroon (2000) explained the role of Shariah boards and argues that these boards are bound to work under particular central banks and are not fully independent.

Since, it is clear that the market fundamentals, rule and regulations, voluntary disclosure procedures etc. are widely the same for Islamic and conventional banking, therefore, the performance measurement criteria of Islamic and conventional banking industry is also to be the same. More importantly, Altman model is composed of performance indicators and performance indicators are already been used in Islamic banking industry from different perspective as discussed in the literature, secondly the designing criteria of performance indicators whether in Islamic or conventional banking system is the same due to the adoption of same rule and same market fundamentals. Therefore, the above arguments legitimized the use of Altman model on Islamic banking industry.

Literature summary

From literature review it is evident that performance indicators like profitability, liquidity, insolvency, and productivity etc. Are widely used in different context for evaluation Islamic bank's performance. However, instead of decreasing CAGR by Islamic banking industry studies relating to future prediction and sustainability of Islamic are found scanty in the literature. Therefore, this study identified the gap on bankruptcy and sustainability diagnosing of Islamic banking industry, and also proposed the suitable bankruptcy model to deal with.

Methodology

Model used in this study (Altman model for service firms)

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

The Altman (2000) model is a linear model composed of four different variable assigned with different weights. More weighted of 6.72 is given to X3, followed by X1, X2, and X4 respectively. The model can predict bankruptcy very accurately five year prior to bankruptcy. Over the years different researchers applied Altman model on banking industry and attained satisfactory results, for instance (Kyriazopoulos et-al., 2014) applied Altman model on cooperative banks of Greek and found that the banks collapsed due to the problem of liquidity. Chieng (2013) applied Altman model on failed and non-failed Euro zone banks and reported the model 100% accurate overall. Sharma et-al., (2013) applied Altman model on private and public banks of India and reported the model 70% accurate overall. Mamo (2013) in his PH.D dissertation used Altman model on a sample of

failed and non-failed Kenyan banks and reported the model 80 percent accurate in failed while 90 per cent accurate in non-failed banks case respectively.

Explanatory variables

Z-score = Z-score is the dependent variable which is used to denote bankruptcy.

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

X1 = Working Capital / Total Assets.

Working capital to total assets ratios measure the liquidity of firm, while working capital is the difference between current assets and current liabilities. Liquidity is considered the vital source in avoiding financial distress.

X2 = Retained Earnings / Total Assets.

Retained earnings to total assets ratios measure the cumulative profitability of the firm, age of firm is considered vital for this ratio as retained earnings are directly linked with the age of firm.

X3 = Earnings before Interest and Taxes / Total Assets.

EBIT to total assets shows the cumulative productivity of the firms, that how productive the assets of the firm are. For Islamic banks due to asset back financing attaining high value in this ratio is vital. EBIT is substituted with earning before zakat and taxes in Islamic banks income statement.

X4 = book value of Equity / Book Value of Total Liabilities.

Book value of equity to book value of total liabilities means the total worth of the firm; this ratio is denominated by insolvency ratio.

Conceptual framework of Altman model for service firms (Altman, 2000)

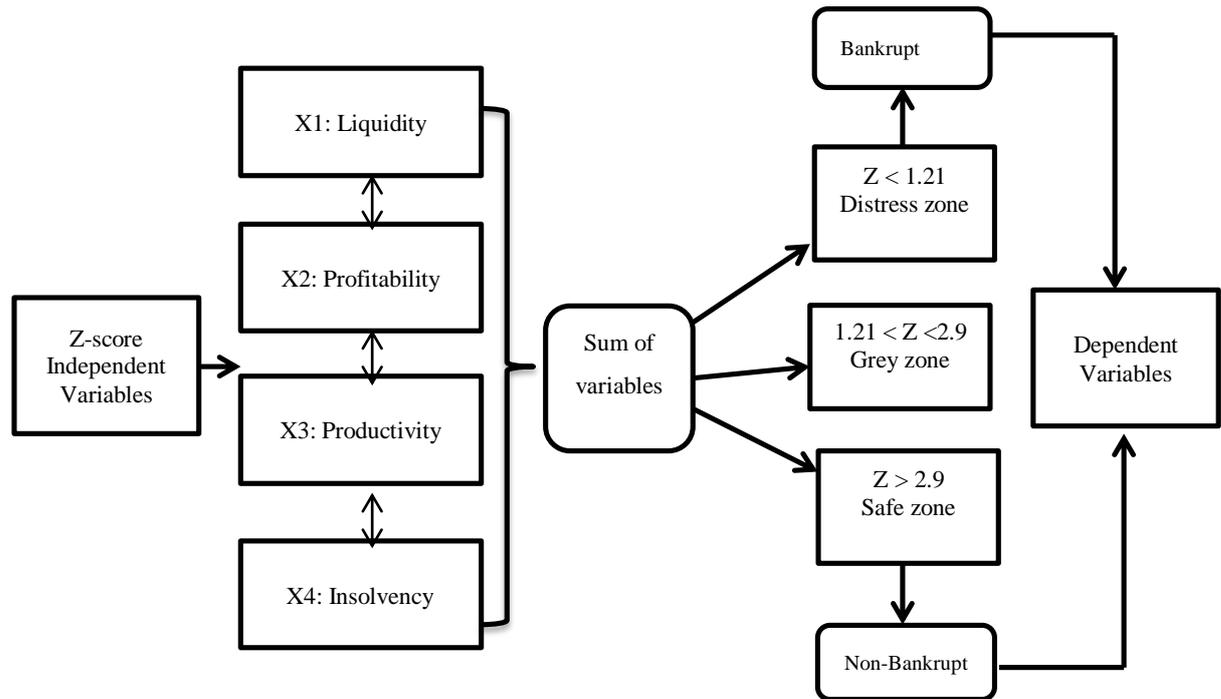


Figure 4: Conceptual framework of Altman model

Sampling Design

Table 9: Breakdown of the global Islam banking assets by country in percentage

S.N	Country	Share (USD1.1 Trillion)
1	Iran	39.7
2	Saudi Arabia	13.7
3	Malaysia	09.8
4	U.A.E	09.1
5	Kuwait	09.0
6	Qatar	04.1
7	Turkey	02.7
8	Bahrain	02.3
9	Indonesia	01.5
10	Egypt	01.3
11	Sudan	01.1
12	Others	05.6
13	Total	100.0

Source: Global Islamic forum 2012: Bridging economies introductory session and GIFF report

Source: The banker, KFHR, Bloomberg, Islamic financial service industry stability report (2013) page.26

Table 9 depicts the share of single Muslim country out of the global Islamic banking assets, for instance the top five Islamic banking countries retained 80 per cent of the global Islamic banking assets. Top five Islamic banking countries are Iran, Saudi Arabia, Malaysia, and U.A.E, these countries are selected for further empirical study. The main

reason of selecting the top five Islamic banking countries is legitimized by the deterioration in major KPI's of Islamic banking industry, secondly, it is clear that the success of financial system is deeply depended on the proper working of banking system (Jeucken *et-al.*, 1999; Brown, 2003; Safiullah, 2010). The top five Islamic banking countries retains a large portion of global Islamic banking assets, which also indicate that the share of Islamic banking industry in the overall financial system of those subjected countries would be very high. However, on the other hand, Islamic banking industry is facing deterioration in all major KPI'S, therefore, the probability of collapse of financial system in those countries is more due to dominance of Islamic banking industry in the subjected countries.

Data Collection

As the data required for Altman model is secondary in nature, therefore all the required data can easily be collected from data streams, the Bank scope, IFS, etc. However, data can also be obtained easily from annual report of representative banks, and the list of Islamic banks and their official websites can be accessed from http://wiki.islamicfinance.de/index.php/Islamic_financial_institutions the Islamic finance wiki.

Propositions Development

Proposition 1: To examine the bankruptcy profile of the top five Islamic banking countries.

Proposition 2: To examine the individual performance indicators that have significant impact on bankruptcy profile.

Proposition 3: To perform a comparative analysis on performance indicators that are associated with bankruptcy.

Note: Bankruptcy is used as a proxy for measuring sustainability

As the KPI'S of major Islamic banking countries are decreasing. Inline to that, the cross country bankruptcy examination will lead us to understand the fact that, whether the deterioration in major KPI's have any effect on the bankruptcy profile of top five Islamic banking countries or not. Therefore the following proposition is developed.

P1: Top five Islamic banking countries differ on bankruptcy exposure.

The second Proposition is to examine the individual performance indicators that have significant impact on bankruptcy profile. The Altman Model argues that liquidity, profitability, productivity and insolvency are the four measures used to detect the sustainability of banks with their scores on bankruptcy. However, further verification may be required to strengthen and confirm the effect of these four components, i.e. Liquidity, profitability, productivity and insolvency with the level of bankruptcy exposure faced by Islamic banks. This would enable the researcher to understand the relevance of these four measures in the context of bankruptcy. Thus, the following hypotheses are developed.

P2: Performance indicators are significantly correlated with bankruptcy exposure.

P2a: *liquidity is significantly correlated with bankruptcy exposure.*

P2b: *Profitability is significantly correlated with bankruptcy exposure.*

P2c: *Productivity is significantly correlated with bankruptcy exposure.*

P2d: *Insolvency is significantly correlated with bankruptcy exposure.*

The third proposition of the study is to perform a comparative analysis on performance indicators of top five Islamic banking countries with regards to bankruptcy. Altman put forward the argument that liquidity, profitability, productivity, and insolvency are the top performance indicators in causing bankruptcy. Therefore, the cross country examination of all the top indicators will lead the researchers to understand the fact that, whether bankruptcy in top five Islamic banking countries is caused due to similar performance indicators or it is being caused by different indicators in different countries. This will enlighten the practitioners and researchers to understand the difference of bankruptcy cause in different areas and go more specifically rather adopting a general approach for all. Therefore the following hypothesis are developed.

P3: Top five Islamic countries do differ on performance indicators with regards to bankruptcy exposure.

P3a: Top five Islamic banking countries do differ on liquidity with regards to bankruptcy exposure.

P3b: Top five Islamic banking countries do differ on profitability with regards to bankruptcy exposure.

P3c: Top five Islamic banking countries do differ on productivity with regards to bankruptcy exposure.

P3d: Top five Islamic banking countries do differ on insolvency with regards to bankruptcy exposure.

This objective of the study can be achieved with the help of regression test .

Conceptual Framework of the Study

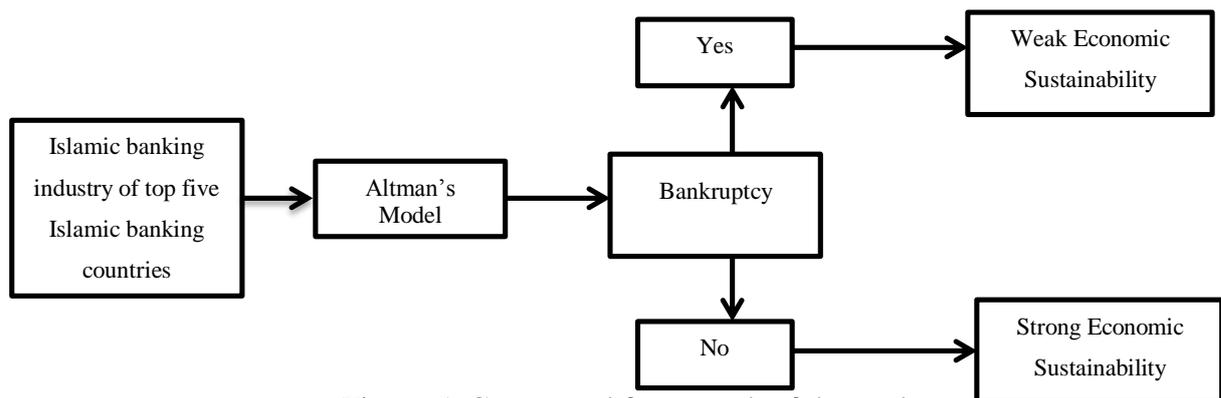


Figure 5: Conceptual framework of the study

Concluding Remarks

This study first described the share of Islamic banking industry along with conventional banking industry share in major Muslim countries, whereas the share of Islamic banking industry is recorded very low as compared to conventional banking share i.e. 16:84. Secondly, the study explored the significant decline in Islamic banking industry through major key performance indicators along with the country wise decrease in Assets CAGR. The point of attention here is that, the banking industry holds a vital position inside any economy and the dependency of efficient financial system is ever more dependent on the proper working of banking industries and vice versa. More importantly, the identified deterioration in major KPI's of Islamic banking industry can lead to the collapse of

financial systems especially in those Islamic banking countries where the dominance of Islamic banking industry in the economy is very high. Therefore, the above problem if not addressed may leads to serious consequences for Islamic banking countries.

In line with the above problem, the detail examination of Islamic banking literature illuminated that scanty studies are available on future prediction and sustainability of Islamic banking industry. Therefore, for addressing the problem this pioneer study first explained the concept of sustainability and its dimensions. Secondly, this study provided the conceptual framework about measuring economic sustainability, in which sustainability is divided into two groups' i.e. strong sustainability and weak sustainability. Furthermore, this study also conceptualized and used bankruptcy as a proxy for measuring economic sustainability.

In context of using bankruptcy as a proxy for measuring economic sustainability different bankruptcy evaluation models are studied and discussed, and hence, it is acknowledged from literature that, Altman model for service firm is the best and recommended model for evaluating economic sustainability of Islamic banking industry. The reason of selecting Altman model is also legitimized by its popularity and accuracy in the bankruptcy literature, secondly the ratios nature of the Altman model made it best fit for Islamic banking industry as ratios are widely used in Islamic banking industry in different perspective.

Inline to the prepositions of the study, firstly the bankruptcy examination will lead us to understand the fact that, whether the deterioration in major KPI's have any effect on the bankruptcy profile of top five Islamic banking countries or not. Secondly, the Altman model argues that liquidity, profitability, productivity and insolvency are the four measures used to detect the sustainability of banks with their scores on bankruptcy. However, further verification may be required to strengthen and confirm the effect of those four components, i.e. Liquidity, profitability, productivity and insolvency with the level of bankruptcy exposure faced by Islamic banks. This would enable the researcher to understand the relevance of these four measures in the context of bankruptcy. Thirdly, the cross country examination of all the top indicators will leads the researchers to understand the fact that, whether bankruptcy in top five Islamic banking countries is caused due to similar performance indicators or it is being caused by different indicators in different countries. This will enlighten the practitioners and researchers to understand the difference of bankruptcy caused in different areas and to adopt more specific approach rather that adopting a general approach for all, this will open new discussion and dimensions on the topic of Islamic banking industry sustainability and meanwhile a separate Islamic banking sustainability diagnosing model can be developed, which is yet to be develop.

Limitation of the Study

As the sustainability is a broader concept which deals with social, environmental and economic aspects. However, due to scanty available literature on the topic this study only addressed the economic sustainability profile of Islamic banking industry.

Suggestions for Further Studies

In order to examine and diagnose the full sustainability profile of Islamic banking industry the social and environmental sustainability dimensions of Islamic banking industry has to be addressed. Moreover, this study also urge about developing of a separate sustainability diagnosing model for Islamic banking industry, which is designed of the core Islamic concept and philosophy.

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ⁱ **Note 1.** GABV is an independent network of around 25 banks along the world, working to promote ethical banking. The group retains more than \$ 70 billion for socioeconomic projects.

ⁱⁱ **Note 2.** After 2009 G-20 summit of London As successor of (FSF) financial stability forum, the (FSB) was established. It is an international body that monitors and recommend about the global financial system.

ⁱⁱⁱ **Note 3.** The (GRI) Global reporting initiative is a non-profit organization formed by United States in 1997. It provides the standards and guideline for sustainability reporting

^{iv} **Note 4.** SAMA Saudi Arabian Monetary Agency established on 1952 in Riyadh Saudi Arabia, it is an agency that acts like the central bank for Saudi Arabia.