

# Voluntary Operational Risk Management Disclosures by Islamic Banks in Muslim Majority Countries

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**Purpose:** In this paper, we propose new voluntary operational risk management disclosure (ORMD) indicators for the Islamic banks by incorporating five dimensions related to operational risk: personnel risk, information technology/system risk, legal risk, social risk, and business performance sustainability risk.

**Methodology:** We provide a quantitative assessment of the effects of the Shari'ah governance system at the country level and corporate governance at the bank level on the quantity of the ORMD while controlling for the influence of stylized factors.

**Findings:** Using a new voluntary ORMD framework, we find that ORMD has a pecking order, Islamic banks voluntarily disclosed information on (i) personnel risk, (ii) social risk, and (iii) performance sustainability risk. Our empirical evidence demonstrates that a two-tiered Shari'ah governance system significantly increases quantity of voluntary ORMD in Muslim majority countries. In addition, we find that an increase in both the government ownership and the percentage of the independent directors increases quantity of voluntary ORMD.

**Implications:** Our results imply that to compete against conventional banks, the Islamic banks must do more, to promote the ethos of Shari'ah by improvements in voluntary ORMD, as disclosing robustness and transparency of their internal controls to a wider variety of stakeholders holds promise for the growth of Islamic banking in the Muslim majority countries.

**Originality/value:** We propose new indicators to help Islamic banks determine the effectiveness of their operational risk management that has significant impact on their internal control environment.

JEL: G18, G21, G32,

Keywords: Islamic banks, Operational risk management disclosure, Shari'ah governance, Corporate governance.

## 1. Introduction

A rose by any other name would smell as sweet is a popular reference to William Shakespeare's play Romeo and Juliet. The reference is often used to imply that the names of things do not affect what they really are. This is so true about the literature that claims Islamic banks are no different from conventional banks in the Muslim majority countries except in complying with Shari'ah. This is a not well-researched claim. There are two types of readers of Islamic banking research: (i) those who do not understand the purpose of Islamic banking, and (ii) those who do not fully understand how Islamic banking works compared to conventional banking. The ignorance of the people in the first group reflects personal biases and Islamophobia. This paper is aimed at the readers in the second group because the people in this group are more likely to understand the differences between Islamic and conventional banking after reading this paper.

The philosophy of Islamic banking can be fully understood in the context of overall objectives of Islamic law and Islamic economic system. In the English language, the phrase 'Islamic law' has been used to refer to Shari'ah, which is mainly based on divine revelation, and its interpretations as developed by the jurists, called *Fiqh*. Shari'ah is Islamic canonical law based on the teachings of Qur'an and the traditions of Prophet Mohammed. *Fiqh* refers to the discipline or body of knowledge on how the jurists have understood and articulated Shari'ah, especially its practical rules that relate primarily to the conduct of individuals. The primary distinction between Shari'ah and *Fiqh* is that the latter has been developed by the Islamic legal experts and schools (*madhabs*)<sup>1</sup>, Islamic scholars, and judges by recourse to independent reasoning (*Ijtihad*) and the issue of legal opinions (*Fatwa*).

A larger part of Shari'ah in the sphere of civil transactions and the parts that are open to interpretation and development are, capable of change and adaptation, in other words, immutable (Kamali, 2008). The general, the absolute, and the manifest part of the Qur'anic rulings remain open to specification, qualification, and clarification respectively according to

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<sup>1</sup> There are four *Sunni madhabs* (or Schools of Islamic thoughts) – the *Hanafi*, *Maliki*, *Shafi'i* and *Hanbali*. Each Muslim could choose the one he or she would follow. The Hanafi school of was formed in Kufa, Iraq, under Abu Hanifa (702 to 767 AH). It preserves many of older Mesopotamian traditions and based its ruling largely on results of logic deduction of its scholars. This is prevailing school of thought in Afghanistan, Pakistan, Egypt, Turkey and Syria. The *Maliki* school adheres to the teachings of Malik ibn Ans ibn Amir (717 to 801) who laid emphasis on the practices of the people of Medina as being the most authentic examples of Islamic practice. The basis of Imam Malik's *Fiqh* and *Fatwa* originates from *Fiqh of Medina*. This school is found mostly in Algeria, Libya, Morocco, Tunis, Kuwait and Bahrain. The *Shafi'i* school was founded by Muhammad Idris ash-Shafi'i (760-820) who was a pupil of Imam Malik and is thought by some to be the most distinguishes of all jurists. He was famed for his modernization and balanced judgements, and although he respected the traditions, he examined them more critically than did Imam Malik. He laid down the sources of *Fiqh*. Followers of this school today are Brunei, Indonesia, Malaysia, Jordan and Sudan. The *Hanbali* school was founded by Ahmad Ibn Hanbal (778-855) who had a high reputation as a traditionalist and theologian and adopted a strict view of the law. The Muslim countries of which majority is *Hanbali* are Qatar and Saudi Arabia (Kunhibava and Rachagan, 2011).

context and purpose. In civil transactions (*mu'amalat*), the textual rulings of the Qur'an on the fulfillment of contracts, the legality of sales, the prohibition of usury (*riba*), forbidding particular modes of transactions and contracts that amount to gambling and speculation (*Qimar*, *Gharar* and *Maisir*), documentation of loans and other forms of deferred payments, are conveyed in broad and general terms, which may be specified and qualified. Accordingly, many prohibitions such as interest, gambling, and excessive risk are to provide a level playing field to protect the interests and benefits of all parties involved in market transactions and to promote social harmony. Therefore, Islamic banking is much more than just refraining from charging interest and conforming to the legal technicalities and requirements on offering Islamic financial products. The prominent Islamic scholars have asserted that Islamic banking is a subset of the overall Islamic economic system that strives for a just, fair, and balanced society. It is a system which aims at contributing to the fulfillment of the socio-economic objectives and the creation of a just society. By so doing, Islamic banking epitomizes the objective of Shari'ah in promoting both economic and social welfare. In other words, Islamic banks, as a Shari'ah-based firm, need to fulfill social obligations that go beyond the conventional capitalist worldview aiming at only maximizing profits (Dusuki, 2006). We hope this explanation about the differences between conventional and Islamic banking will help readers to update their knowledge.

Using the classical principle-agent theoretical framework, in this paper we theorize that shareholders and depositors are exceedingly concerned that their funds are invested in a Shari'ah compliant manner by the Islamic banks in the Muslim majority countries. Any deviation from placing all supplied funds in Shari'ah compliant investments by Islamic banks creates agency problems for the shareholders and depositors, and operational risk (OR) for Islamic banks. If the shareholders and depositors are to understand the risk profile of the bank, they need to receive information about the risks a bank faces, and how the boards are managing this risk. Voluntary internal control disclosure mitigates the threat of providing unreliable information to investors. Specifically, the voluntary operation risk management disclosure (ORMD) enhances legitimacy for two major reasons: first, by addressing institutional pressures to assure the effectiveness of market discipline; and second, by managing stakeholders' perception of a corporation's reputation (Oliveira et al., 2011).

There are a number of Islamic banking studies on Shari'ah governance (Hamza, 2013), risk management and disclosures practices (Neifar and Jarboui, 2017; Elamer et al., 2017; Tafri et al., 2011; Wan Ibrahim et al., 2011; Hassan, 2010; Khan, 2001), and corporate governance practices (Raphie and Hassan, 2017; Quttainah et al., 2013; Maali et al., 2006; Hassan and

Christopher, 2005; Haniffa and Hudaib, 2004). We argue that none of these studies have examined ORMD for Islamic banks. For instance, Elamer et al., (2017) examine the Islamic governance quality, national governance quality and risk management and disclosure practices in general. They do not offer any explanation about the legal and social context influencing the ORMD in the Islamic banks from countries with higher national governance quality. Furthermore, these studies did not examine Shari'ah governance systems, government ownership and directors' independence in the Islamic banks, which we hypothesize are important determinants of the ORMD practices.

According to Chernobai et al. (2011) internal and external corporate governance influences the ORMD. We hypothesize that it is essential to explore the influence corporate and Shari'ah governance systems have on ORMD that have also been examined for the conventional banks. The governments in the Muslim majority countries have a significant interest in the success of the Islamic finance due to socio-economic and political reasons. A high percentage of government ownership of banks promotes government's goals in both the development and the political theories (La Porta et al., 2002). The agency problem may be mitigated in firms with concentrated government ownership structure, as controlling shareholders have strong incentives to monitor managers, and even replace them in the case of poor performance. For the Islamic banks, the stakeholders not only include shareholders but also the investors and entrepreneurs involved in a profit-sharing agreement, recipients of *Zakat*, and members of the broader Islamic community. Therefore, unlike conventional banks, the independent directors represent a wider spectrum of stakeholders in the Islamic banks. A high percentage of independent directors improves independent monitoring and advising role of the board. The independent directors guide and assist managers thereby reducing agency problems.

Among other factors that are likely to influence the risk taking behaviours of firms is the legal environment and bank regulations. A central feature of the Islamic banks in the Muslim majority countries is that these banks operate either under the single-tiered or the two-tiered Shari'ah governance system. The two-tiered Shari'ah governance system is analogous to a rule-based regulatory system. In contrast, the single-tiered Shari'ah governance system is a self-regulatory system that aims to provide efficient means of creating incentives for moral behavior without the need to incorporate any one version of appropriate manifestation of Shari'ah governance system. We argue that none of the previous studies have examined the difference in Shari'ah governance system, which may have an effect on internal controls environments of the Islamic banks, which begs this question: Do Islamic banks' managers voluntarily provide more information in the annual reports on the ORMD to reduce the agency

problems and efficiency loss of information in a rule-based regulatory compared to a self-regulatory system?

To answer the key question raised above, firstly, we present an exploratory framework as a step towards the operationalizing of ORMD by focusing on: (i) personnel risk, (ii) information technology risk, (iii) legal risk, (iv) performance sustainability risk and (v) social risk. Our approach of framing ORMD rely on general guidelines of Basel II and Basel Committee on Banking Supervision (2003) (hereafter BCBS)<sup>2</sup>. Although an accurate, timely and transparent quantified measure of OR would be ideal for the stakeholders of Islamic and conventional banks but such an ideal quantitative measure of OR does not exist. OR is inherently a multi-dimensional in character, as people, processes, and systems can fail in multiple ways (Brown, 2012; Jobst, 2007). The data required to measure OR are difficult to assemble and its use has not been fully understood in the conventional banking. In the case of Islamic economic system for which our ignorance is such that detailed OR parameters are challenging to observe and quantify. Nevertheless, OR in Islamic banking can be categorized into three main types of risks: general, legal and Shari'ah non-compliance. Shari'ah non-compliance (*ex-ante* and *ex-post*) distinguishes the nature of OR in Islamic banks viz-a-viz conventional banks (Greuning and Iqbal, 2008), while the addition of the legal, political, and social risks dimensions broadens the traditional view of business risk espoused in the philosophy of conventional banking. Lack of progress toward fulfillment of the socio-economic objectives also constitute an element of OR in the wider Islamic economic system.

Secondly, we provide a quantitative assessment of the effects of the Shari'ah governance system at the country level and corporate governance at the bank level on the quantity of the ORMD while controlling for the influence of stylized factors. Our research contribution is twofold: first, prior research does not go beyond meagre account of corporate governance and risk management practices of Islamic banks. We consider the impact of both Shari'ah governance systems and corporate governance on the ORMD using an international sample of Islamic banks in Muslim majority countries. Second, we respond to calls for addition of the legal, political, and social risks dimensions in the ORMD (Eilifsen et al., 2001; Cummins and Embrechts, 2006). Our findings show that total quantity of voluntary ORMD has a pecking order, Islamic banks voluntarily disclosed information on (i) personnel risk, (ii) social risk, and (iii) performance sustainability risk. Our empirical results show that the two-tiered Shari'ah

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<sup>2</sup> Among the operational risk event types proposed by BSBC (2003), personnel risk, including employment practices and workplace safety, and IT risk in execution, delivery, and process management are the key contributory factors of the OR.

governance system significantly increases the ORMD. Also, we provide evidence that an increase in both the government ownership and the percentage of the independent directors increases the quantity of the voluntary ORMD. Our analysis also shows that internal controls for the Islamic financing contracts such as Mudarabah and Musharakah, and adoption of AAOIFI standards also influence ORMD. The rest of the paper is organized as follows: Section 2 presents a review of the literature and hypotheses. Section 3 explains the sample, data collection procedure, and empirical approach. Section 4 presents the results. Section 5 concludes the paper.

## 2. Literature review

Operational risk (OR) is defined as the risk of losses resulting from inadequate or failed internal controls involving processes, people, and systems from external events, which include, but are not limited to, legal risks and compliance risk (Archer and Abdullah, 2007). The ORMD influences perceptions of a wide variety of stakeholders in the Muslim majority countries while the OR disclosure affects regulatory agencies, depositors and shareholders' perceptions about the Islamic banks' profitability, growth, and future cash flows. For instance, Abdel Karim (2001) argues that Islamic banks adopt different accounting treatment for investment accounts that affect depositors and shareholders directly because some Islamic banks treat these accounts as equity or liabilities, while others report them as an off-balance sheet item, which permits them to hide any information related to investment accounts, such as losses because of misconduct or negligence. As a result, the OR losses disclosure is more critical to depositors and shareholders.

Although the BCBS introduced the capital requirements to increase the scope and scale of operational risk management disclosure to stakeholders but ORMD has not been mandatory yet. BSBC (2003) suggests that ORM is most effective where a bank's culture emphasizes high standards of ethical behavior at all levels of the bank. In a similar vein, Barakat and Hussainey (2013: 255) propose that disclosure of OR is unlike credit and market risks, it presents a unique opportunity to consistently evaluate the discretionary decision of a bank's management to provide risk disclosures of a certain quality in the annual report. In the context of Islamic banking, the inclusion of the social risk besides personnel risk, IT risk, and legal risk, provides an opportunity to top management to promote a wider understanding of their responsibility in the Islamic society, through both actions and words. The Islamic banks are highly likely to provide voluntary information about the transparency of their internal controls to demonstrate their strong commitment to mandatory *ex-ante* and *ex-post* Shari'ah compliance. Haniffa and Hudaib (2007) suggest that Islamic banks are expected to be more

socially responsible than their counterparts, as Islam emphasizes social justice. We propose that the indicators of social responsibility - *Zakat*, and *Qard-e-Hasan* funds are reliable indicators of Islamic banks' efforts to promote socio-economic justice in the Muslim majority countries.

## 2.2 Regulation and Supervision of Islamic Banks

Like conventional banks, Islamic banks follow Basel requirements that emphasize capital adequacy, risk management, internal controls, and external audits in the Muslim majority countries (Quttainah et al., 2013). Islamic banks also follow financial reporting standards, such as local GAAP or International Financial Reporting Standards (IFRS). The Basel Pillar 3 requirements state the bank shall have discretion over where the risk disclosures are made and have the freedom to determine the disclosure medium. The Basel Committee expects the disclosures to be made semi-annually with following two exceptions: capital adequacy ratios must be disclosed quarterly whereas the summary of risk management policies and objectives can occur manually. To alleviate the concerns about agency problems and OR, Islamic Financial Services Board (IFSB) and Accounting, Auditing, Organization for Islamic Financial Institutions (AAOIFI) have issued Corporate governance, Shari'ah standards, and guidelines of risk management which complement the Basel II guidelines. IFSB encourages Islamic banks to ensure risk reporting to the supervisory authority but there is no mandatory disclosure (or minimum obligation) to report on the operational risk management (ORM), and thus any such reporting is 'voluntary.'

Supervision of Islamic banks deviates from the conventional banks across the Muslim majority countries. As pointed out by Song and Oosthuizen (2014), there are two models of Islamic banks' supervision in the Muslim majority countries. In the first model, both conventional and Islamic banks are subject to supervision by a single supervisory authority (e.g., Saudi Arabia, Kuwait, Qatar, and the U.A.E), while in the second model, supervision of both types of banks is separated and lies with separate supervisory units within a single supervisory authority (e.g., Bahrain, Indonesia, and Pakistan). In jurisdictions where a single authority supervises both types of banks, there are two types of supervisory frameworks (i) single supervisory framework applies to all banks, (ii) supervisory authority applies separate framework to Islamic banks and conventional banks<sup>3</sup>. In contrast, in jurisdictions where the responsibility for supervising Islamic and conventional banks lies with separate units of

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<sup>3</sup> Under this framework, the Basel Committee on Banking Supervision framework could be complemented by Islamic Financial Services Board (IFSB) prudential standards and guiding principles on Islamic banking.

supervisory authority, the separate supervisory units or authorities may apply separate supervisory frameworks. Thus, in the former case, the Islamic banks operate under adapted conventional banking laws and the Shari'ah governance frameworks. We posit that the differences in these supervisory frameworks have implications for developing ORMD culture in the Muslim majority countries and a potentially interesting venue for this research.

### 2.3 Shari'ah Governance Systems

According to Hasan (2010, p.82), the Shari'ah governance system refers to a set of institutional and organizational arrangements for overseeing Shari'ah compliance in Islamic financial institutions (IFIs). Most of the Islamic banks in the Muslim majority countries operate under either the single-tiered or the two-tiered Shari'ah governance system. In the single-tiered Shari'ah governance system (also referred to as a decentralized Shari'ah governance), the central bank provides flexibility for developing internal governance systems to ensure *ex-ante* and *ex-post* compliance with Shari'ah. In contrast, in the two-tiered Shari'ah governance system, Islamic banks are ought to adopt the Shari'ah governance system mandated by a centralized Shari'ah Advisory Board or Shari'ah Advisory Council (SAC). A SAC is concerned with *ex-ante* Shari'ah compliance through standardization of Shari'ah interpretations by the Islamic jurists and Islamic scholars for the structuring of the financial contracts, and *ex-post* monitoring of these contracts. Although all Muslim majority countries have a state-owned SAC but its mandate, governance, and accountability differ across these countries<sup>4</sup>.

The Islamic banks also have a Shari'ah Supervisory Board/Committee (SSB/SSC) at the bank level in the two-tiered Shari'ah governance system. The Islamic banks must receive approval from the SAC to appoint SSB members. The SSB of Islamic bank is legally required to produce the Shari'ah report expressing its opinion on Islamic banks' compliance with Shari'ah principles. Hence, the role of the SSBs is of importance in the two-tiered Shari'ah governance system besides SAC. Askari et al., (2010) propose that the SSB membership should be subjected to five principles: independence, confidentiality, competence, consistency, and disclosure. Independence of the SSB members is important for ensuring that there would be no conflict of interest and that they represent the investors/depositors, not the management. Confidentially refers to the SSB members respecting proprietary information and the

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<sup>4</sup> For example, in Malaysia, the passing of the *Central Bank of Malaysia Act 2009* gives greater clarity to the role of the National SAC as the ultimate authority and center for any issues and questions on Shari'ah by financial institutions and the court of law. Each SSB must comply with the directives of the National SAC. The members of SAC cannot serve on the SSB in Malaysia and a SSB member cannot have multiple appointments. Bahrain has established Accounting Auditing Organization for Islamic Financial Institutions (AAOIFI) standards and its central bank requires all banks to set up SSBs complying with AAOIFI governance standards. Quttainah (2009) provides a survey of regulations in the Gulf Cooperation Council (GCC).



intellectual property of the institution they represent by not accepting a similar or higher position in other Islamic banks or IFI. Competence refers to the SSB members' academic and professional knowledge, and expertise and training in Islamic banking, Shari'ah principles, and jurisprudence. Consistency implies that the SSB members ensure that standardized contracts apply to similar business transactions and encourage consensus opinions. Thus, it is plausible that importance of SSB in the two-tiered Shari'ah governance system may influence the perception of OR, which in turn affect the scope of ORMD.

## 2.2 Theoretical framework

According to Elamer et al. (2017: 6), a neo-institutional theory incorporates both efficiency/instrumental and legitimation/moral perspective of Islamic banks operating in an institutional environment that links high governance quality to more transparent risk disclosure. The efficiency/instrumental perspective problematize managerial incentive to provide risk disclosure because Islamic banks' managers are economic agents who compete for critical resources to maximize their self-interests. Islamic governance structure or Shari'ah governance system provides encourages Islamic banks to ensure Shari'ah compliance of all transactions. At the same time, from the legitimation/moral perspective, neo-institutionalism theorists suggest that managers not only compete for critical resources but also endeavor to gain social acceptance (Zattoni and Cuomo, 2008).

An important proposition of agency theory is that managers have incentives to expend resources on monitoring to reduce the efficiency loss of agency problems. An increase in commitment to voluntarily provide information sends a credible signal to current and prospective investors of the quality of a bank's governance structure, which could enhance Islamic bank's economic efficiency by gaining access to critical resources such as external finance and affiliation to legitimacy enhancing institutions such as IFSB and AAOIFI. Managers possess superior knowledge about internal controls. To reduce the efficiency loss of agency problems resulting from the information asymmetry, managers have an incentive to make voluntary disclosures about internal controls which is not directly observable by investors because internal controls are a set of activities within the organizations. By providing voluntary disclosures of risk management and internal controls, managers can reduce cost of capital since reduced information asymmetry lowers the risk of investors in forecasting future cash flows and return on their investments. Hermanson (2000) reports that financial statements users perceive voluntary reporting on internal control as informative above and beyond the information content of audit report. The auditors evaluate the strength of internal control, the evaluation focuses primarily on internal controls over financial reporting, which are not

necessarily the same internal controls that are relevant for the efficiency and effectiveness of transaction processing and Shari'ah compliance. For depositors and investors, information about such activities is likely to be very relevant as it reveals whether Islamic bank management understands the risk in the business and is managing them actively.

Credibility of reporting on internal controls may be a larger problem of Islamic banks and to augment the credibility of voluntary disclosures, Islamic banks can adopt several measures including the presence of independent outside directors and existence of independent audit committee, to ensure truthful reporting by management. A mere presence of independent directors might reinforce the investors' belief that managers' actions to safeguard their investments are carefully scrutinized therefore SSB provides an additional layer of monitoring to safeguard the interests of wider stakeholders in the society.

#### *2.4 Related Literature and Hypotheses development*

The Bank of International Settlements (BIS) (2011) findings on the banks' ORM practices provide evidence that governance and independent review processes are important lines of defense. Although most of the Muslim majority countries have Islamic banking laws and regulations for promoting Islamic banking operations side-by-side conventional banking, but these laws do not prescribe homogenous Shari'ah governance systems. Thus, differences in the rules and regulations underpinning Shari'ah governance systems in the Muslim majority countries are expected to result in different sets of institutional and organizational arrangements to oversee Shari'ah compliance (ex-ante and ex-post). For instance, institutional arrangements in the two-tier Shari'ah governance system clarify the role of the SAC as the highest-level authority whose decisions are legally binding, and the SSB takes on the certification, monitoring, and compliance roles. In contrast, the SSB only has an advisory role in the single-tier Shari'ah governance system. An SSB is dependent on management to accomplish its advisory role<sup>5</sup>. We predict that when one of these elements in the governance system is missing, whether it is either the SAC or the SSB, emphasis on ORMD would differ. Indeed, Hamza (2013) indicates that the diversity of backgrounds and the different schools of jurisprudence of SSB members as well as the regional context and national regulatory environment in which the members of SSB function can create inconsistency in the interpretation of Shari'ah. There is no prior evidence of the relationship between the Shari'ah governance system and ORMD. Thus we suggest that:

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<sup>5</sup> Iran, Pakistan, and Sudan do not require the presence of Shari'ah Supervisory Boards within the banks' governance system.

*H1: A two-tiered Shari'ah governance system increases the quantity of the voluntary ORMD.*

Information and agency problems increase with diffuse ownership as it is relatively more expensive for dispersed investors with small shareholdings to actively monitor management's activities. In such situations, presence of a significant blockholder such as the government could increase the propensity of banks to report on internal control because the government would closely monitor the quality of a bank's financial reporting. Eng and Mak (2003) report that government ownership is associated with increased disclosure. We assume that governments in the Muslim majority countries have a significant interest in the success of the Islamic finance industry, therefore we suggest:

*H2: A high percentage of government ownership increases the quantity of the voluntary ORMD.*

A board's monitoring is influenced by the regulatory regime's emphasis on mechanisms of governance for protection of investors (Fama and Jensen, 1983), and in the case of Islamic banks it expands to the investment account holders, thus a board may have to adjust its monitoring emphasis accordingly. Barakat and Hussainey (2013) report that banks having a higher proportion of outside board directors positively affect voluntary disclosure, and Wang and Su (2013) report that a higher percentage of independent directors in the financial institutions reduce the agency problems by disciplining managers to provide more voluntary disclosure. Neifar and Jarboui (2017) also report that independent directors significantly impact the OR voluntary disclosure. Therefore, we suggest that:

*H3: An increase in the percentage of the independent board increases the quantity of the voluntary ORMD.*

A board is assisted in fulfilling its responsibility by audit committee. A large percentage of independent board members on an audit committee are likely to have better internal control (Chernobai et al., 2011). Independent directors having financial expertise are more likely to detect material misstatements and able to oversee the financial reporting process effectively. Previous studies (see e.g., Barakat and Hussainey, 2013; Zhang et al., 2007) report a positive impact of audit committee independence on internal control strengths and the internal control management disclosure. Therefore, we suggest that:

*H4: A high percentage of independent board members on the audit committee increases the quantity of the voluntary ORMD.*

Directors' network and interlocks provide the necessary resources that could only be available to the firm through the experienced directors (Pfeffer, 1972). The independent directors can examine the broader environment for new trends and developments in the industry through their affiliations with strategic partners. Therefore, we suggest that,

*H5: A high number of board members' affiliations within Islamic finance industry increase the quantity of the voluntary ORMD.*

Islamic banks' capital structure<sup>6</sup> influences the quantity of ORMD (Khan and Ahmed, 2001). For instance, under the *Musharakah* and *Mudarabah* contracts, Islamic banks enter into risk sharing contract with different counterparties in different industries compared to fixed income modes of financing contract such as the *Murabahah* and *Ijarah*. Khan and Ahmed (2001) report that managers perceive higher operational risk in *Musharakah* and lower in *Murabahah* and *Ijarah*. We posit that a bank's portfolio comprising a high percentage of *Mudarabah* and *Musharakah* than *Murabahah* and *Ijarah* influence ORMD differently. There is no prior evidence of the relationship between the profit and risk sharing contract structures and ORMD. Thus, we suggest:

*H6: An increase in the level of Musharakah and Mudarabah financing increases the quantity of the voluntary ORMD.*

### **3. Data and Methodology**

#### *3.1 Sample*

The global Islamic financial services industry includes 360 registered institutions operating in 37 countries (Muslim and non-Muslim majority population countries). There are 198 commercial banks, 111 conventional banks with Shari'ah windows, 33 foreign-owned subsidiaries, and 90 insurance companies (The Banker, 2015: 9). Out of 198 commercial banks, we screened 100 Islamic banks from the 20 countries ranked according to the total Shari'ah-compliant assets, for which annual reports were available in the English language from 2010 to 2016<sup>7</sup>. We excluded conventional banks with separate Islamic windows. Also, we restricted

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<sup>6</sup> Under a one-tier model, the Islamic banks have deposits or investment accounts on the liability side and multiple investments (mostly on fixed income instruments) that include *Murabahah*, *Istisn'a/Salam* and *Ijarah*. In contrast, under a two-tier model, the Islamic banks rely on *Mudarabah* on both liability and asset sides.

<sup>7</sup> Elamer et al. (2017) used a sample of 64 banks in 10 Islamic countries from 2006 to 2013; Quttainah et al., (2013) examined 82 Islamic banks from 15 countries; Song and Oosthuizen (2014) surveyed 36 countries who are members of IMF; Quttainah (2009) surveyed 40 Islamic banks in five of the GCC countries- Kingdom of Saudi Arabia, Kuwait, Qatar, Bahrain, and United Arab Emirates.

our sample to those Islamic banks that have a headquarters in a country where Muslims form most of the population. We obtained data on the financial statements, share ownership, and corporate governance data from the Thomson Reuters *Zawya* database and the annual reports. The information about the AAOIFI standards and IFSB membership was obtained from the IFSB website, annual reports, and other online sources. Table 1 shows the total number of institutions offering Shari'ah compliant financial services varies, from high of 42 in the KSA to low of 10 in Qatar. The Kingdom of Saudi Arabia, Bahrain, and the United Arab Emirates (UAE) follow the single-tiered governance system, whereas Malaysia, Kuwait, Indonesia, Bahrain, Bangladesh, and Pakistan follow the two-tiered Shari'ah governance system. Most of the Islamic banks comply with the Basel II and Basel III regulations. Forty-one banks have the observer membership with the IFSB, and 31 banks use the AAOIFI standards.

[Insert Table 1 here]

### 3.2 Measurement of OR and ORMD

OR is a multifaceted in nature and scope. The practical difficulties in quantifying OR have encouraged many financial institutions to use any one of three following approaches to calculate capital charge for the OR (i) Basic Indicator Approach (BIA), (ii) Standardization Approach (SA) and (iii) Advanced Measurement Approach (AMA). The BIA and SA approach, requires banks to hold a capital for OR losses equal to a fixed percentage of gross income. Under each of above-mentioned approaches, the resultant regulatory capital requirement is aimed at obtaining simple quantitative measure of OR. For instance, Elamer et al. (2017) use the amount of regulatory capital for OR, measurement approach for calculation of capital for OR, and operational risk management, strategies, and processes.

ORMD, on the other hand, has been measured using a collection of indicators based on the voluntary reporting by financial institutions (see, e.g., Deumes and Knechel, 2008; Sheen, 2005; Maali et al., 2006; Haniffa and Hudaib, 2001). Deumes and Knechel (2008) use public policy reports on corporate governance and internal control, to identify six separate reportable items to explore the nature, extent, and quality of internal control. They capture all internal control information generally available in annual reports of Dutch-listed firms during the period 1997- 1999. They calculate a score for each firm in the sample by summing all six disclosure items, placing equal weight on each item. We follow indicator based approach in this paper. The actual quantification of losses from OR is beyond the scope of paper because the banks do not report these data in their annual reports.

### 3.3 Operational risk management disclosure framework

Our exploratory framework draws on BCBS (2003) Principle 4, 5 and 10. Principle 4 states that banks should identify and assess the OR inherent in all material products, activities, processes, and systems. Principle 5 states that banks should implement a process to monitor OR profiles and material exposure to losses regularly. Lastly, Principle 10 states that a bank should disclose its ORMF in a manner that will allow investors and counterparties to determine whether a bank effectively identifies, assesses, monitors and controls/mitigate OR. BCBS does not mandate regular reporting of pertinent information relating to application of these principles to stakeholders. We contend that these principles are guidelines for developing a ORMD framework that addresses the nature of multi-level interactions between stakeholders and policymakers. Next, we describe the main dimensions of ORMD framework and Table 2 shows items under each of the dimensions.

[Insert Table 2 here]

*Personnel risks:* Personnel risk arise from incompetence and fraudulent acts of employees exposing banks to OR losses. Human errors occur due to lack of understanding of the processes, policies, systems and distinguishable from moral hazard problems (e.g., dishonesty). Moral hazards of colluding with dishonest employees often leading to overriding of the controls are very difficult to detect (Izhar, 2010). A lack of trained manpower and moral hazard problems worsen personnel risks. Lack of understanding of the Shari'ah compliance (ex-ante and ex-post) could exacerbate operational losses. For instance, an internal control problem cost Dubai Islamic Bank US\$50 million in 1998 when a bank official did not conform to the bank's credit policy; this event resulted in a run on its deposits of US\$138 million, representing 7% of the bank's total deposits.

To capture this risk, we follow Quttainah (2009) and Grais and Pellegrini (2006). We collected the following information from the annual reports: the role of a directors in risk management department/committee; hiring, training, and development of risk management staff to reduce human error and frauds, segregation of duties between personnel involved in documentation, transaction processing and reporting, and role of external advisor(s) in risk management practices. Deumes and Knechel (2008) also used this criterion as an indicator of sound internal controls in their study in the Netherlands.

*Information system risks:* The greater use of more highly automated technology has the potential to transform risks from manual processing errors to system failure risks (BCBS, 2003). A large volume of transactions creates the need for continual maintenance of

Information Technology (IT) platform and back-up systems. Reliable IT system enables banks to not only record transactions promptly but also monitor non-compliance. Furthermore, growing use of outsourcing arrangement and the participation in clearing and settlement systems can mitigate some risk but can also present significant other threat to banks. IT system failure events that result in data entry errors, unapproved access, data breaches, and power outages at peak times could further exacerbate IT risk. To develop a list of items for the IT risk dimension, we used the BCBS (2003) OR event typology (events that have the potential to result in substantial losses), and collected the following information from the annual reports: segregation of duties for the systems development activities and the daily operations; acquisition, development, and implementation process of new IT systems; staff training for anti-money laundering and counter-terrorism financing (AML/CTF); outsourcing for IT systems for risk management outside the country; and information relating to IT system breakdown and monetary impact of these events.

*Performance sustainability risk:* The Shari'ah non-compliance is the biggest OR faced by the Islamic banks. Just as product failures in the manufacturing industries are often attributed to functional errors in the manufacturing process that can have significant repercussions on a global scale, negligence in Shari'ah compliance could perpetuate moral hazard throughout Islamic banking industry. To capture this risk, we collected the following information: the income earned from the Islamic products that were later deemed to be Shari'ah non-compliant; the earnings restatements; the board's profit warnings in the last three financial years; the downgrades of the credit rating by an independent credit rating agency and information relating to accounting controversies in the previous three financial years.

*Legal risk:* The differences in opinions given by the Islamic scholars about the permissibility of an Islamic contract can cause legal risk. This could happen when two or more Islamic scholars have differences in Shari'ah interpretation about legality of Islamic product structure. As a result, Islamic scholars of one country may discourage local businesses from dealing with Islamic banks from other countries due to differences in their Shari'ah interpretations. Furthermore, significant changes in the leadership of SAC and SSBs, *de jure* banking regulation reversals, *fatwas*<sup>8</sup>, and political unrest (such as in Qatar) may significantly impact banks' operations. Such changes and events affect the terms and conditions of the

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<sup>8</sup> Murabahah is an approved and acceptable mode of finance in several regulatory jurisdictions. Under this contract, the Islamic bank must buy the asset and then transfer the right to the client. The order placed by the client is not a sale contract but merely a promise to buy. According to the Organization for Islamic Council (OIC) Fiqh Academy resolution, a promise can be binding on one party only, but AAOFI treats this promise to buy as binding on the client. In the former, even after putting an order and paying the commitment fee, the client can rescind from the contract. Thus, this specific risk is considered unsettled in nature, which can expose an Islamic bank to litigation issues (Khan and Ahmed 2001).

Islamic contracts. As EY (2012) pointed out that average return of profit sharing investment account (PSIA) has decreased from 3% in 2006 to 1.3% of 20 Islamic banks in the GCC region in 2010. Thus, investors' confidence in the banks' ability to sustain promised rates of return based on PSIA contract has been strongly revised.

We collected the following information: changes in a customer's legal capacity to enter into a contract; number of the pending civil and/or Shari'ah courts' decisions relating to the validity of the products; use of external lawyers for legal cases filed by the bank against the delinquent accounts and any legal suit filed against the bank in the past three years. We argue that these indicators fulfill the needs of AAOIFI and IFSB that endorse that Islamic banks accurately disclose the risk factors including legal pronouncements or opinions (IFSB, 2005).

*Social risks:* According to Chapra (1985), Islamic banks have greater social welfare responsibilities and religious commitments to achieve the Islamic economic objectives, which includes social justice, equitable distribution of wealth and promoting economic development. Women empowerment through overcoming gender discrimination in employment practices and accessibility to the Islamic banking ought to be crucial in this regard. Islamic banks could play a significant role in promoting economic and social justice through equal employment opportunities practices. Similarly giving donations as a part of their corporate social responsibility (CSR) is a common trend among companies these days, but a monetary donation is unsustainable in the long run. Islamic banks are in a unique position to provide loans known as *Qard-e-Hasan* to those who want to start up their ventures as well as *Zakat* to minorities. To examine the banks' efforts (or lack thereof) to address these social welfare objectives, we collected the following information: the number of women in senior executive and management positions; training, education and career opportunities for the women, amount of microfinance provided to the women to establish their business ventures; distribution of *Zakat* and *Qard-e-Hasan* programs.

We used MAXQDA software for the content analysis of the annual reports to develop ORMD score for each bank. A total of 2,711,276 words from the 78 annual reports were analyzed over the period of 2011 to 2016 to get the actual counts of the items under each of the five risk dimensions. Repetitions were considered due to the panel nature of the dataset. Appendix I provides some examples from the annual reports that show differences in qualitative nature of ORMD. We adopted a standard approach of scoring the voluntary disclosures in the annual reports, i.e., an item was scored 1 if it is disclosed in the annual report and 0 otherwise. It is not in the scope of this paper to evaluate each item by using a points system for the type (qualitative or quantitative), nature (financial or non-financial), and outlook



(forward or backward-looking). We used unweighted disclosure scoring approach that has been used in previous studies (see, e.g., Elamer, 2017; Haniffa and Hudaib, 2007). Thus, the total number of points awarded for voluntary disclosure was obtained for each bank by summing the individual score on each item under the personnel risk, information technology risk, reputational risk, legal risk, and performance sustainability risk dimensions. Our ORMD measuring approach is to determine whether understanding of OR and BCBS (2003) OR event typology has significant impact on the internal control environment of Islamic banks. It is important to stress that a higher score on ORMD suggests a higher quality of ORMD and *vice versa*. It does not suggest that a higher score on ORMD is equivalent to less losses from OR. The latter assertion would require us to establish cause-effect relationship between bank losses due to OR and ORMD. We do not have access to proprietary OR losses databases, therefore we are unable to determine measured impact of OR losses that might have significant market impacts.

### 3.4 Methodology

To test the hypotheses developed in the paper, we estimate the following model (hereafter Model 1):

$$ORMD_{i,t} = \alpha + \beta_1 SGS_{i,t} + \beta_2 G\_Own_{i,t} + \beta_3 IND_{i,t} + \beta_4 ACI_{i,t} + \beta_5 AFFL_{i,t} + \beta_6 Musharakah_{i,t} + \beta_7 Mudarabah_{i,t} + z_{i,t} + \varepsilon_{i,t} \quad (1)$$

where for a bank  $i$  at the end of year  $t$ ,  $ORMD$  is total quantity of the operational risk management disclosure;  $SGS$  is a dummy variable equal to 1 for a bank operating in the two-tiered Shari'ah governance system, otherwise 0;  $IND$  is the percentage of independent directors;  $G\_Own$  is the percentage ownership of ordinary shares by the government;  $AFFL$  is the average number of a board member's affiliations within the Islamic financial industry;  $ACI$  is the percentage of independent directors on the audit committee, and  $z$  is a vector of control variables that include institutional and stylized variables. We control for influence of the,  $AAOIFI$  and  $IFSB$  membership which are two important institutional variables. Following BSBC (2003) and the earlier studies on the voluntary disclosure (Garcia-Meca et al., 2005; Lang and Lundholm, 1993), we control for the influence of total equity to total assets ratio, and the number of employees, and the effects of the macroeconomic environment, such as business cycle, using the GDP growth rate. Chernobai et al. (2011) suggest that economics difficulties resulting from the business cycle may lead to an increase in rogue trading and fraud. We apply Tobit regression to the Model 1 as our dependent variable is censored at zero in the case of

non-disclosure of any information. Tobit regression has been used in studies on the voluntary disclosures (see e.g., Dyduch and Krasodomska, 2017; Jizzi et al, 2014).

## 4. Results

### 4.1 Descriptive statistics

The descriptive statistics are organized as follows. First, we report frequency distribution of the total quantity of risk management and ORMD by banks and by years (see Table 3 Panel A), then we report the total quantity of risk management, and OR disclosure by Shari'ah governance system, AAOIFI, and IFSB membership, and test whether the total amount of risk management and OR disclosure is independent of the Shari'ah governance system, AAOIFI, and IFSB membership respectively. We also report the total quantity of OR by dimensions (see Table 3 Panel B). Lastly, we report the differences in the mean values of size, profitability, Islamic financing, total equity to assets ratio, capital adequacy ratio, and corporate governance variables of the Islamic banks operating in the single and two-tiered Shari'ah governance system using the independent sample *t*-test.

[Insert Table 3 here]

Table 3 shows that number of Islamic banks reporting on risk management and OR disclosure increased from 7 in 2011 to 45 in 2014 (see Panel A). The Pearson Chi-square test shows that the total quantity of risk management and OR disclosure is dependent on the Shari'ah governance system, and frequency count seems to indicate that the amount of risk management, and OR disclosure is higher in the two-tiered Shari'ah governance system than in the single-tiered Shari'ah governance system. In addition, we find that the quantity of risk management and OR disclosure is dependent on IFSB membership and use of the AAOIFI standards.

Our content analysis of ORMD dimensions seems to suggest a pecking order, Islamic banks provided more information related to the personnel risk, social risk, and performance sustainability risk. The Pearson Chi-square test shows a significant influence of the Shari'ah governance systems, IFSB and AAOIFI affiliation on the quantity of personnel risk disclosure. Besides personnel risk, Islamic banks disclosed information about staff training for AML/CTF. Some banks also provided information about their acquisitions, development, and implementation process of new IT systems for risk management. Thirteen Islamic banks reported that they had used the services of an independent global consultant to diagnose and assess risks, develop risk frameworks and infrastructures, and improve risk management. None of the banks reported an IT system breakdown or systemic crash, which might have had a

monetary impact. Regarding social risks, Islamic banks reported mostly on *Zakat* and *Qard-e-Hasan*. The Chi-square tests results confirm that the Shari'ah governance system, AAOIFI, and IFSB membership significantly influence the IT risk and social risk disclosures.

For the legal risk disclosure, we find that five Islamic banks reported the use of external lawyers for legal proceedings. None of the banks reported information in regard to the number of cancellations or discontinuation of Islamic contracts, means of financing of the cancelled or discontinued contracts, and changes in the national legislations that could have affected the structure of the contracts. None of the banks voluntarily disclose information about the number of pending cases relating to the validity of banking products. A few banks reported the fines imposed by the supervisory authorities, for instance, the total number of fines imposed by Saudi Arabian Monetary Agency and Ministry of Municipal and Rural Affairs on Bank Al Bilad. Hassan (2009) also report that political sensitivity is not taken into serious consideration by the GCC environment. According to Bhattacharya and Chiesa (1995) increased transparency could potentially lead to valuable information being leaked to the rivals in the industry once they are released to the investors. These repercussions might inhibit extensive disclosure due to the sensitivity of such information. It appears that banks do not see incentive exists for them to improve their risk management capabilities as they will not want to be viewed as superior to other banks in this respect. Lastly, for the performance sustainability risk, we do not find that any of the Islamic banks restated their earnings in the last three financial years and issued profit warnings, while for Shari'ah non-compliance, most banks reported that all earnings that have been realized from sources or by means that are prohibited by Shari'ah had been set aside for charitable causes. However, only a few banks stated the actual amounts disbursed each year.

In Table 4, our bivariate results show that the Islamic banks in the two-tiered Shari'ah governance system have higher levels of *ROE* and *Ijarah* than Islamic banks in the single-tiered Shari'ah governance system. The Islamic banks in the single-tiered Shari'ah governance system have significantly higher total equity to assets ratio, lower *NPL* ratio, and a higher capital adequacy ratio compared to the Islamic banks in the two-tiered Shari'ah governance system.

[Insert Table 4 here]

For the corporate governance variables, the independent sample t-tests show that the Islamic banks operating under the two-tiered Shari'ah governance system have significantly higher *G\_Own*, a higher percentage of *Female directors* on board, bigger *Board size* and *SSBs*. Our correlation results using the Spearman-rank (non-parametric correlation) coefficients show that *G\_Own* and *INDP* are significantly positively correlated with *ORMD*. The Islamic

financing contract types such as *Mudarabah*, *Musharakah*, and *Murabahah* are also positively correlated ORMD. Thus, these correlation results seem to suggest that the internal and external governance structure creates a vigorous internal control environment influencing the quantity of ORMD.

#### 4.2 Multivariate analysis

In Table 5, we report the Tobit estimation results. The estimated coefficient of *SGS* is significantly positive, which seems to suggest that the two-tier Shari'ah governance system increases the quantity of the voluntary ORMD. This result supports H1. We also find that the estimated coefficient of *G\_Own* and *INDP* are significantly positive, thus providing support for the H2 and H3. Barako et al. (2006) also report that the extent of voluntary disclosure in the annual reports is related to the board composition. The estimated coefficient of *ACI* and *AFFL* are not positive, indicating that an increase in the percentage of independent directors on the audit committee, and increase in the board members' affiliation within the Islamic finance industry do not increase the quantity of the voluntary ORMD. Thus, H4 and H5 are not supported. Safieddine (2009) report that none of the GCC requires Islamic banks to establish audit, compensation, or nomination committees, although some of them do encourage it. We find that the nature and scope of internal control requirements required for specific Islamic financing contract *Mudarabah* also influence the quantity of the voluntary ORMD providing support to H6. After the addition of the two control variables, *AAOIFI* and *IFSB* in our baseline model 1, we find that estimated coefficient of *G\_Own* and *INDP* are significantly positive but the estimated coefficient of *SGS*, *AAOIFI* and *IFSB* are not significantly positive (see Column 2). Lastly, we add the *GDPG* besides *AAOIFI* and *IFSB* variables (see Column 3) and find the estimated coefficients retain their significance supporting all hypotheses except H5. It is plausible that inclusion of these variables capture the unobservable institutional characteristics within each country that overlaps with the Shari'ah governance systems applications.

[Insert Table 5 about here]

#### 4.3 Robustness tests

For testing the robustness of estimates, we used the ordered Probit estimation approach following Deumes and Knechel (2008). The ordered Probit model considers the ordinal nature of ORMD. Table 6 shows the results of the ordered Probit analysis without and with control variables (see Column 1 and 2). The estimated coefficient of *SGS* is significantly positive, suggesting that ORMD increases under the two-tiered Shari'ah governance system supporting

H1 (see Column 3). We find support for H2, i.e., an increase in the government ownership has a significant positive impact on ORMD. H3-H5 are not supported. We also find that increases in the Islamic financing through *Mudarabah* and *Musharakah* have a significant positive influence on ORMD, thus supporting H6. Among the control variables, *AAOIFI* and *GDPG* has a significant positive influence on the levels of the voluntary ORMD. According to Grais and Pellegrini (2006), besides Shari'ah boards, most Islamic banks, particularly those complying with AAOIFI standards, have established another internal Shari'ah review units. These internal Shari'ah review units are independent of other departments. The array of tasks that they perform is parallel to those of audit departments – reviewers use all necessary powers to ascertain that all financial transactions implemented by management comply with SSB rulings.

[Insert Table 6 about here]

#### 4.4 Sensitivity analysis

In this section, we report the sensitivity analysis. Firstly, we used non-performing loans ratio as a measure of operational risk following McNulty and Akhigbe (2017). Secondly, we examine the influence of external auditors. Neifar and Jarboui (2017) report that the external auditor type affects significantly the OR information disclosed by the listed Islamic banks. According to BIS (2003), supervisory evaluation of OR requires that management also seek external assurance to ensure that internal control processes and procedures are in place. Irrespective of the Shari'ah governance systems, the Islamic banks appoint external auditors. We argue that if an Islamic bank has engaged any one of the Big 4 auditing firms (PriceWaterhouse, Deloitte, Ernest Young, or KPMG) as the external auditor, it is likely such a bank would have high audit quality, as deficiencies identified by the Big 4 auditors would improve the internal control environment. Therefore, we use a dummy variable *Big4* equal to 1 and 0 otherwise. Lastly, we used a dummy variable *SA* equal to 1 for an Islamic bank that uses SA approach for calculation of OR charge and 0 otherwise. Under the SA approach, the banks are required to segregate their activities into business lines, and within each business line, the capital charge for OR is calculated by multiplying the gross income by a factor (denoted by  $\beta$ ), assigned to that business line. We used the following equation (hereafter Model 2) for the sensitivity analysis:

$$NPL_{i,t} = \alpha + \beta_1 INDP_{i,t} + \beta_2 G\_Own_{i,t} + \beta_3 AFFL + \beta_4 ACI_{i,t} + \beta_5 SA_{i,t} + \beta_6 Big4_{i,t} + \beta_7 Musharakah_{i,t} + z_{i,t} + \varepsilon_{i,t} \quad (2)$$

We find that an increase in the percentage of the independent directors, government ownership, and audit committee independence significantly reduces the non-performing loans

ratio. The external monitoring by the *Big4* and *SA* (one of the recommended approach by the BIS to measure the operational risk capital) also have a significantly negative influence on the non-performing loans ratio. These results seem to suggest that using the *SA* approach, the Islamic banks segregate their activities into business lines (contract types), which allow them to closely monitor the portfolio compositions and take precautionary measures before the things get of hand and cause OR losses. In addition, engaging the Big 4 auditors for the external audit promote adoption of better internal controls.

[Insert Table 7 about here]

## 5. Conclusion

This study presents an exploratory framework as a step towards the examining of OR by focusing on: (i) personnel risk, (ii) information technology risk, (iii) legal risk, (iv) performance sustainability risk and (v) social risk. Our data analysis seems to suggest that the Islamic banks in the Muslim majority countries voluntarily disclose more information related to (i) personnel, (ii) social and (iii) performance sustainability risk. Our empirical results show that the two-tiered Shari'ah governance system increases the quantity of voluntary ORMD, which seem to suggest that a centralized risk-based supervisory approach to enhance legitimacy of Islamic banking significantly influences the internal controls environment, procedures, and resources of the Islamic banks. As Shari'ah matters are subject to interpretation, even among Islamic scholars, increasing voluntary ORMD could be a proactive disclosure strategy in dealing with diverse groups of stakeholders. Further analysis provides evidence that the Islamic banks using the *SA* for the calculation of OR capital have lower NPLs ratio.

An important policy recommendation that emerges out from our study is that the importance of OR disclosure should be discussed at all levels of management and resulting plans should be implemented in both form and substance to enhance legitimacy of the Islamic banks in the Muslim majority countries. We propose that future research should explore managerial incentives that affect the internal control environment and how such incentives affect the earnings quality of the Islamic banks, and other influences besides corporate governance and Shari'ah governance systems that reduce internal control weaknesses and minimize losses due to OR in the Islamic financial system. Besides, it will also be worth examining empirically, how risk management disclosures are valued by investors and its impact on stakeholders' perceptions.

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**Table 1: Islamic Banking in Muslim Majority Countries**

Panel A: 10 largest Muslim majority countries ranked by total Shari'ah-compliant assets

No.	Country	Muslim population % population	Islamic banking law	Supervisory authority	Total Shari'ah compliant assets (Number of institutions offering Shari'ah services)	Shari'ah Supervisory committee/Board (SSB)		SSB composition - members
						At central bank	At bank level	
1	Iran	99.00	Usury free Banking Act 1983	Central bank of Iran	US\$316,423(28)	Yes	No	n.a
2	Saudi Arabia	92.70	Royal Decree No. 23	SAMA	306,807(42)	No	Yes	Not less than three
3	Malaysia	66.10	Islamic Banking Law 1983	Bank Negara Malaysia <sup>c</sup>	206,309(37)	Yes	Yes	Minimum of three
4	UAE	75.00	Federal Law No-6, 1985	Central Bank	111,294(20)	Yes	Yes	Not less than three
5	Kuwait	70.70	Decree Law No 130	Central Bank of Kuwait <sup>c</sup>	84,448(27)	No	Yes	Not less than three
6	Qatar	65.20	Islamic Finance Rule Book (IFSI)	Qatar Central Bank	70,988(10)	No	Yes	Not less than two
7	Bahrain	70.30	Regulations for Islamic Banks	Central Bank of Bahrain	65,068(30)	Yes	Yes	Not less than three
8	Bangladesh	90.80	Banking Act 1991	Bangladesh Central Bank	22,298(24)	Yes	Yes	n.a
9	Indonesia	87.30	Laws for Islamic Banking 1992 <sup>a</sup>	Bank Indonesia	21,044(56)	Yes	Yes	Not less than two
10	Pakistan	96.50	Banking companies Ordinance 1962 <sup>b</sup>	State Bank of Pakistan	10,101(19)	Yes	No	Only one advisor

<sup>a</sup> Amended in 1999.

<sup>b</sup> Policies for Islamic banking were introduced in 2001 and 2003

<sup>c</sup> Board member appointment and dismissal is in hand of SSB at the central bank level.

Table 2 continued...

### Panel B: Top 20 Islamic Banks in the Muslim majority countries

This panel presents the names of top 20 Shari'ah compliant Islamic banks' names, country of origin, membership with the AAOIFI, IFSB and their Basel-II and Basel-III compliance.

No.	Name of bank	Country	Compliance with Basel	Membership with AAOIFI	Membership with IFSB
1	Al Rajhi Banking Corporation	KSA	Basel III	Yes	Yes
2	Dubai Islamic Bank	UAE	Basel II	Yes	Yes
3	Kuwait Finance House	Kuwait	Basel III	Yes	Yes
4	Masraf Al Ryan Bank	Qatar	Basel III, II	No	No
5	Abu Dhabi Islamic Bank	UAE	Basel II	Yes	Yes
6	Al Baraka Banking Group	Bahrain	Basel III	Yes	Yes
7	Qatar Islamic Bank	Qatar	Basel III	Yes	Yes
8	Bahrain Islamic Bank	Bahrain	Basel III	Yes	Yes
9	Barwa Bank	Qatar	Basel III, II	No	No
10	Bank Al Jazira	KSA	Basel III, II	Yes	Yes
11	Gulf Bank	Kuwait	Basel III	Yes	Yes
12	Bank Albilad	KSA	Basel III	No	No
13	BIMB Holdings	Malaysia	Basel III, II	No	Yes
14	Bank Rakyat Indonesia	Indonesia	Basel II	n.a	n.a
15	Bank Islami Pakistan	Pakistan	n.a	No	No
16	Meezan Bank	Pakistan	n.a	n.a	n.a
17	Arab National Bank	KSA	Basel II	n.a	n.a
18	Islami Bank	Bangladesh	Basel II	Yes	Yes
19	Shahjalal Islami Bank	Bangladesh	Basel II	n.a	n.a
20	Emirates NBD Bank	UAE	Basel II	Yes	Yes

## Table 2: Five Dimensions of ORMD framework

This table presents the items included in the five dimensions capturing ORMD.

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### *Personnel risk*

Item1: The board describes the role of directors in risk management department/committee.

Item2: A statement on the hiring, training, and development of risk management staff to reduce human errors and frauds etc.

Item3: A statement relating to the segregation of duties between personnel involved in documentation, transaction processing, and reporting.

Item4: A statement about the role of external advisor(s) in risk management practices.

### *Information technology risk*

Item1: A statement relating to the segregation of duties between systems development activities and the daily operations.

Item2: A statement on the acquisitions, development, and implementation processes of new IT for risk management.

Item3: A statement on management responsibility relating to the staff training for anti-money laundering and counter terrorism financing (AML/CTF).

Item4: A statement on the outsourcing of IT systems for risk management outside the country.

Item5: A statement describing the IT system breakdown, crash, and monetary impact of these events.

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### *Legal risk*

Item1: A statement about any changes in a significant customer's legal capacity to enter into a contract;

Item2: A statement on the number of pending civil and/or Shari'ah court's decisions relating to the validity of banking products;

Item3: A statement on the use of external lawyers consulted for legal cases filed by the bank against the delinquent accounts;

Item4: A statement about any legal case filed against the bank in the past three financial years.

### *Performance sustainability risk*

Item1: A statement or disclosure of amounts relating to the income earned from the Islamic products later deemed to be Shari'ah non-compliant.

Item2: The board of directors or external auditor's statement about the restatement of earnings in the last three financial years.

Item3: The board's statement on the profit warnings in the last three financial years.

Item4: Information about the credit rating downgrades by an independent credit rating agency.

Item5: The auditor's report stating accounting controversies in the last three financial years.

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### *Social risk*

Item1: Any information about the women employed in senior executive and management positions.

Item2: Any information about the training, education, and career opportunities for women.

Item3: Any information relating to microfinance provided to the women to establish their business ventures.

Item4: Any information pertaining to the *Zakat* distribution.

Item5: Any information relating to the Qard-e-Hasan programs.

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### Table 3 Islamic Banks' Reporting on the Risk Management, Operational Risk Management Dimensions

This table presents the frequency of reporting on items by year (number of banks) in the Panel A, and by each risk dimension in the Panel B. The maximum (minimum) shows the highest (lowest) frequency of an item under each of the five dimensions (note: not all the items are shown under each dimension).

Panel A:

Items	The frequency of banks reporting in a year					
	2011	2012	2013	2014	2015	2016
<i>Risk management: Includes statements on the risk committees/departments; board/CEO responsibility for system of internal controls and compliance risk, frequency of meetings.</i>	7(4)	39(13)	29(15)	45(15)	37(16)	30(12)
<i>Operational risk: Includes statements on the issues identified by the internal audit and/or compliance departments such as weaknesses or breakdown in controls.</i>	16 (4)	57 (13)	61 (15)	67 (15)	51 (16)	40 (12)
	<i>Total Quantity of Risk Management and ORMD by Shari'ah Governance system and Institutional Membership</i>					
	<i>Shari'ah Governance system</i>		<i>IFSB Membership</i>		<i>AAOIFI Standards</i>	
<b>Items</b>	<i>Single-tier</i>	<i>Two-tier</i>	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>
<i>Risk management: Includes statements on the risk committees/departments; board/CEO responsibility for the system of internal controls and compliance risk, frequency of meetings.</i>	37	149	124	63	156	85
<i>Operational risk: Includes statements on the issues identified by the internal audit and/or compliance departments such as weaknesses or breakdown in controls.</i>	150	171	188	132	164	102
Chi-square test (p-value)	39.244*** (0.000)	33.6870*** (0.000)	18.863** (0.015)	20.186* (0.090)	13.045* (0.100)	28.129*** (0.008)

Table 3 continued...

Panel B:

<i>Dimensions</i>	<i>Total Quantity of ORMD by dimensions</i>				<b>Chi-square test (p-value)</b>		
	<i>Total</i>	<i>Country of origin</i>	<i>Maximum</i>	<i>Minimum</i>	<i>Shari'ah Governance</i>	<i>IFSB Membership</i>	<i>AAOIFI Standards</i>
<i>Personnel risk</i>	85	Bahrain, Qatar, KSA, Malaysia, UAE.	Hiring, training and development of risk management staff to reduce human errors and frauds (51)	Role of external adviser in risk management practices of an Islamic bank (0)	9.977** (0.0759)	34.330** (0.045)	32.918* (0.063)
<i>Information technology risk</i>	21	Bahrain, Bangladesh, Dubai, KSA, Malaysia, Qatar, UAE.	Outsourcing of IT system of banking activities (14)	System breakdown, crash, and monetary impact of these events (0)	28.883*** (0.000)	4.672** (0.030)	2.781* (0.095)
<i>Social risk</i>	79	Bahrain, Kuwait, KSA, Indonesia, UAE.	Zakat amount paid and its distribution (54)	Women employment in senior executive and operations positions (2). Microfinance loans provided to women and ethnic minorities (2)	40.408*** (0.019)	35.892** (0.049)	30.536 (0.167)
<i>Legal risk</i>	5	Bahrain, Kuwait, Qatar.	Use of external lawyers consulted for legal cases (5)	Pending civil and/or Shari'ah court's decisions relating to the validity of banking products (0)	0.4770 (0.845)	0.118 (0.730)	0.915 (0.338)
<i>Performance sustainability risk</i>	32	Bahrain, KSA, UAE.	Income earned from products later deemed to be Shari'ah non-compliant (32)	Restatement of earnings and profit warnings (0)	20.298** (0.041)	28.556*** (0.002)	44.020*** (0.000)

Note: Pearson Chi-square test values are reported for items under the column Maximum. \*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.

#### Table 4: Bivariate results

This table presents the results of the independent sample t-test in the Panel A and B and the Spearman correlation coefficients between the variables in the Panel C.

*Panel A: Profitability, Size, Islamic finance (by contract types), Non-performing loans, and the Capital adequacy ratio*

	Shari'ah governance System		Mean Difference	t-value
	One-tier	Two-tier		
ROE	13.66	13.87	1.63	2.46**
Employees	4978	5601	623.43	0.46
Istisn'a	0.68	0.46	-0.22	-0.76
Mudarabah	0.51	0.54	0.33	0.07
Musharakah	0.39	1.55	1.15	1.90
Murabahah	7.12	11.61	4.50	1.17
Ijarah	5.18	10.40	-5.21	-1.76*
NPL ratio	1.19	3.44	-2.25	-4.16***
Total Equity to assets ratio	14.17	10.17	4.54	6.21***
Capital Adequacy Ratio	13.96	9.81	4.15	4.04***

*Panel B: Corporate governance, board composition, and Shari'ah board*

	One-tier	Two-tier	Mean Difference	t-value
G_Own (%)	3.84	9.91	-6.07	-1.88***
INDP	26.61	24.56	-3.04	-0.536
ACI	19.40	11.43	-7.96	-1.49
AFFL	0.68	1.13	-0.45	-0.93
Female directors	1.61	10.60	-8.94	-3.60***
Board size	9.44	11.64	1.70	3.43***
SSB	3.00	5.45	2.45	3.77***

\*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.

(Table 4 continued...)

Panel C: Spearman rank correlation coefficients

	SGS	AAOIFI	IFSB	ORDM	INDP	G_Own	ACI	AFFL	SSB	ROE	Employees	Equity	Istisn'a	Mudarabah	Musharakah	Murabahah	Ijarah	GDPG
SGS	1.00																	
AAOIFI	-0.23*	1.00																
IFSB	0.06	0.51**	1.00															
ORDM	0.07	0.43**	0.18	1.00														
INDP	-0.03	0.08	-0.11	0.20*	1.00													
G_Own	-0.02	0.23*	0.51**	0.22**	0.09	1.00												
ACI	0.01	-0.12	-0.05	0.04	0.84**	0.16	1.00											
AFFL	-0.04	0.13	-0.03	0.07	0.16	-0.05	-0.15	1.00										
SSB	0.31**	0.32**	0.05	-0.16	0.15	-0.07	-0.03	0.31**	1.00									
ROE	0.23**	-0.18	0.01	-0.33***	0.09	-0.07	0.21	-0.27	0.31**	1.00								
Employees	0.05	-0.31**	0.32**	-0.03	0.27	-0.18	0.27*	-0.19	-0.39**	0.23	1.00							
Equity	-0.30***	-0.27**	0.13	-0.27**	-0.04	-0.13	-0.09	-0.08	-0.54***	0.01	0.78***	1.00						
Istisn'a	-0.09	0.34***	0.65***	-0.11	-0.50***	0.14	-0.44***	-0.36**	0.189	0.01	0.09	0.05	1.00					
Mudarabah	0.15	0.36***	0.25**	0.22*	0.25**	-0.06	0.16	0.31**	0.17	0.15	0.39**	-0.05	0.002	1.00				
Musharakah	0.28**	0.20	0.05	0.45***	0.53***	0.03	0.38***	0.34**	0.30**	0.11	-0.03	-0.23*	-0.215	0.19	1.00			
Murabahah	0.07	0.21	0.19	0.26**	0.18	0.22*	0.30**	-0.29	-0.11	-0.19	-0.03	-0.09	-0.01	0.21	0.103	1.00		
Ijarah	-0.07	0.31***	0.42***	0.18	0.04	0.50**	0.09	-0.22	0.24*	-0.11	-0.22	-0.21	0.42**	0.13	0.050	0.58**	1.00	
GDPG	0.16	-0.14	-0.20*	-0.01	-0.10	-0.24*	0.04	-0.11	0.07	0.15	-0.31**	-0.37***	-0.02	-0.15	0.032	-0.09	-0.14	1.00

AAOIFI is a dummy variable equal to 1 if a bank has adopted the AAOIFI standards, otherwise 0; ACI, is the percentage of independent board members on the Audit Committee; AFFL is the average number of Islamic Industry affiliation of the board; IFSB is a dummy variable equal to 1 the Islamic bank that is a member of IFSB, otherwise 0. Employees is the total number of employees as at the financial year's end. Equity is the total equity to total assets ratio; G\_Own is the percentage ownership of ordinary shares by the government; GDPG is the annual GDP growth rate; INDP is the percentage of independent directors on the board. Istisn'a is the total Islamic financing under A sale contract, in which the bank (Al Saanee) sells an asset to be developed using its own materials to a customer (Al Mustasnee) according to pre-agreed-upon precise specification, at a specific price, installments dates, and to be delivered on a specific date. This developed asset can be either developed directly by the Group or through a subcontractor and then it is handed over to the customer on the pre-agreed-upon date. Mudarabah is the total of the Islamic financing under a contract between the Islamic bank and a customer, whereby one party provides the funds (Rab Al Mal) and the other party (the Mudarib) invests the funds in a project or a particular activity and any generated profits are distributed between the parties according to the profit shares that were pre-agreed upon in the contract. The Mudarib is responsible for all losses caused by his misconduct, negligence, or violation of the terms and conditions of the Mudarabah; otherwise, losses are borne by Rab Al Mal. Musharakah is the total of the Islamic financing under a contract between the Islamic bank and a customer for entering into a partnership in an existing project (or to be established), or in the ownership of a specific asset, either on ongoing basis or for a limited time, during which the Islamic bank enters into particular arrangements with the customer to sell to him/her its share in this partnership until he/she becomes the sole owner of it (diminishing Musharakah). Profits are distributed according to the mutual agreement of the parties as stipulated in the contract; however, losses are borne according to the exact shares in the Musharakah capital on a pro-rata basis. Murabahah is the total Islamic financing under a sale contract, in which the Islamic bank sells to a customer a physical asset, goods, or shares already owned and possessed (either physically or constructively) at a selling price that consists of the purchase cost plus a mark-up profit. Ijarah is the total Islamic financing under lease contract whereby the bank (the Lessor) leases to a customer (the Lessee) a service or the usufruct of an owned or rented physical asset that either exists currently or is to be constructed in the future (forward lease) for a specific period of time at specific rental installments. The lease contract could be ended by transferring the ownership of a leased physical asset through an independent mode to the lessee. ORDM is the total quantity of operation risk management disclosure. ROE is the return on common shareholders' equity. SGS is a dummy variable equal to 1 for the Islamic banks operating in the two-tier Shari'ah governance system and otherwise 0; SSB= total number of members on the Shari'ah Supervisory Board/Committee. \*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.



**Table 5**  
**Tobit Regression Results**

This table reports the Tobit estimation results of the Model 1.

$$ORMD_{i,t} = \alpha + \beta_1 SGS_{i,t} + \beta_2 G\_Own_{i,t} + \beta_3 INDP_{i,t} + \beta_4 ACI_{i,t} + \beta_5 AFFL_{i,t} + \beta_6 Musharakah_{i,t} + \beta_7 Mudarabah_{i,t} + z_{i,t} + \varepsilon_{i,t}$$

Variables	1	2	3
<i>Intercept</i>	-3.2288 (0.1803)	-3.6844 (0.1956)	-5.7508 (0.1343)
<i>SGS</i>	1.2808** (0.0254)	0.9252 (0.1280)	1.2630** (0.0290)
<i>G_Own</i>	5.5573** (0.0145)	6.0531** (0.0208)	6.9117** (0.0106)
<i>INDP</i>	2.9512*** (0.0026)	3.0136** (0.0193)	2.9531** (0.0131)
<i>ACI</i>	-2.0412 (0.1025)	-3.5492** (0.0432)	-2.7181* (0.0942)
<i>AFFL</i>	-2.0412 (0.1025)	-1.1906 (0.2516)	-1.1621 (0.2791)
<i>Mudarabah</i>	0.5861*** (0.0000)	0.4015*** (0.0000)	0.4145** (0.0000)
<i>Musharakah</i>	-0.2753*** (0.000)	-0.8324** (0.0394)	-0.4786* (0.1077)
<i>AAOIFI</i>	-	-0.7077 (0.2458)	-0.4389 (0.4943)
<i>IFSB</i>	-	-0.0059 (0.9906)	-0.1477 (0.8067)
<i>Employees</i>	-1.6045** (0.0017)	-1.5781** (0.0056)	-1.6443** (0.0046)
<i>Equity</i>	1.5301*** (0.0000)	1.6277*** (0.0000)	1.7869*** (0.0000)
<i>ROE</i>	-5.0918** (0.0312)	-5.4640** (0.0215)	-5.1283* (0.0749)
<i>GDPG</i>	-	-	0.0402 (0.5944)
<i>Year dummies</i>	Included	Included	Included
<i>Log likelihood</i>	-40.41	-39.67	-40.09
<i>Number of banks</i>	78	78	78

The dependent variable is total ORMD, and independent variables are defined as follows: *AAOIFI* is a dummy variable equal to 1 if a bank has adopted the AAOIFI standards, otherwise 0; *ACI*, is the percentage of independent board members on the Audit Committee; *AFFL* is the average number of Islamic Industry affiliation of the board; *Employees* is the total number of employees as at the financial year's end. *Equity* is the total equity to total assets ratio; *G\_Own* is the percentage ownership of ordinary shares by the government. *GDPG* is the annual GDP growth rate. *INDP* is the percentage of independent directors on the board. *IFSB* is a dummy variable equal to 1 the Islamic bank that is a member of IFSB, otherwise 0. *Mudarabah* is the total of the Islamic financing under a contract between the Islamic bank, and a customer, whereby one party provides the funds (Rab Al Mal) and the other party (the Mudarib) invests the funds in a project or a particular activity, and any generated profits are distributed between the parties according to the profit shares that were pre-agreed upon in the contract. The Mudarib is responsible for all losses caused by his misconduct, negligence, or violation of the terms and conditions of the Mudarabah; otherwise, losses are borne by Rab Al Mal. *Musharakah* is the total of the Islamic financing under a contract between the Islamic bank and a customer for entering into a partnership in an existing project (or to be established) or in the ownership of a specific asset, either on an ongoing basis or for a limited time, during which the Islamic bank enters into particular arrangements with the customer to sell to him/her its share in this partnership until he/she becomes the sole owner of it (diminishing Musharakah). Profits are distributed according to the mutual agreement of the parties as stipulated in the contract; however, losses are borne according to the exact shares in the Musharakah capital on a pro-rata basis. *ROE* is the return on common shareholders' equity. *SGS* is a dummy variable equal to 1 for the Islamic banks operating in the two-tier Shari'ah governance system, otherwise 0. \*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.

**Table 6**  
**Ordered Logistics Regression Results**

This table reports the ordered logistic estimation results of the Model 1.

$$ORMD_{i,t} = \alpha + \beta_1SGS_{i,t} + \beta_2G\_Own_{i,t} + \beta_3INDP_{i,t} + \beta_4ACI_{i,t} + \beta_5AFFL_{i,t} + \beta_6Musharakah_{i,t} + \beta_7Mudarahah_{i,t} + z_{i,t} + \varepsilon_{i,t}$$

Variables	1	2	3
<i>SGS</i>	-0.2059 (0.3680)	0.5950 (0.2684)	0.0907* (0.1080)
<i>G_Own</i>	1.1825 (0.4182)	3.8733** (0.0308)	5.2950*** (0.0060)
<i>INDP</i>	0.9494 (0.4170)	-1.7658 (0.2282)	-1.5410 (0.2957)
<i>ACI</i>	-2.1486** (0.0792)	0.4174 (0.8003)	-0.8430 (0.3172)
<i>AFFL</i>	-1.9794** (0.0040)	-1.3698* (0.0828)	0.6324 (0.7034)
<i>Mudarahah</i>	0.2031*** (0.0012)	0.8116*** (0.0015)	0.1919*** (0.0034)
<i>Musharakah</i>	0.2718*** (0.0068)	0.0225** (0.0093)	0.7409* (0.0607)
<i>AAOIFI</i>	-	1.4206** (0.0427)	1.4223** (0.0250)
<i>IFSB</i>	-	-1.7801** (0.0018)	-2.1117*** (0.0004)
<i>Equity</i>	0.6401*** (0.0013)	1.1191*** (0.0000)	1.2114*** (0.0000)
<i>ROE</i>	-4.6100*** (0.0131)	-4.2115** (0.0333)	-2.4132 (0.2675)
<i>GDPG</i>	-	-	0.1933** (0.0405)
<i>Chi-square test</i>	10.64**	15.35***	17.32***
<i>Log likelihood</i>	-90.61	-92.76	-90.61
<i>McFadden R<sup>2</sup></i>	0.3629	0.3478	0.3629
<i>Number of banks</i>	78	78	78

The dependent variable is total ORMD, and independent variables are defined as follows: *AAOIFI* is a dummy variable equal to 1 if a bank has adopted the AAOIFI standards, otherwise 0; *ACI*, is the percentage of independent board members on the Audit Committee; *AFFL* is the average number of Islamic Industry affiliation of the board; *G\_Own* is the percentage ownership of ordinary shares by government; *GDPG* is the annual GDP growth rate; *INDP* is the percentage of independent directors on the board. *IFSB* is a dummy variable equal to 1 if a bank is a member of IFSB, otherwise 0. *Mudarahah* is the total of the Islamic financing under a contract between the Islamic bank and a customer, whereby one party provides the funds (Rab Al Mal) and the other party (the Mudarib) invests the funds in a project or a particular activity and any generated profits are distributed between the parties according to the profit shares that were pre-agreed upon in the contract. The Mudarib is responsible for all losses caused by his misconduct, negligence, or violation of the terms and conditions of the Mudarahah; otherwise, losses are borne by Rab Al Mal. *Musharakah* is the total of the Islamic financing under a contract between the Islamic bank and a customer for entering into a partnership in an existing project (or to be established), or in the ownership of a specific asset, either on an ongoing basis or for a limited time, during which the the Islamic banks enters into particular arrangements with the customer to sell to him/her its share in this partnership until he/she becomes the sole owner of it (diminishing Musharakah). Profits are distributed according to the mutual agreement of the parties as stipulated in the contract; however, losses are borne according to the exact shares in the Musharakah capital on a pro-rata basis. *Murabahah* is the total Islamic financing under a sale contract, in which the Islamic bank sells to a customer a physical asset, goods, or shares already owned and possessed (either physically or constructively) at a selling price that consists of the purchase cost plus a mark-up profit. *ROE* is the return on common shareholders' equity. *SGS* is a dummy variable equal to 1 for the Islamic banks operating in the two-tier Shari'ah governance system, otherwise 0. \*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.

**Table 7**  
**Sensitivity analysis**

This table reports the linear regression results of the Model 2.

$$NPL_{i,t} = \alpha + \beta_1 INDP_{i,t} + \beta_2 G\_Own_{i,t} + \beta_3 AFFL + \beta_4 ACI_{i,t} + \beta_5 SA_{i,t} + \beta_6 Big4_{i,t} + \beta_7 Musharakah_{i,t} + z_{i,t} + \varepsilon_{i,t}$$

Variable	Estimates	Estimates	Estimates
Intercept	-1.6304** (0.0020)	-0.0946 (0.8224)	-0.1846 (0.6510)
<i>INDP</i>	-0.0817 (0.3252)	-0.2088*** (0.0117)	-0.2112*** (0.0070)
<i>G_Own</i>	0.1087 (0.1550)	-0.1049* (0.1083)	-0.1069* (0.1093)
<i>AFFL</i>	-0.3556*** (0.0040)	-0.1623* (0.0690)	-0.0547 (0.4307)
<i>ACI</i>	-0.1253** (0.0051)	-0.1112*** (0.0007)	-0.1043*** (0.0077)
<i>SA</i>	-0.0420*** (0.0120)	-0.1236*** (0.0295)	-0.1218** (0.0245)
<i>Big4</i>	-0.2718*** (0.0068)	-0.2125*** (0.0093)	-0.1409** (0.0507)
<i>AAOIFI</i>	-	-0.0940** (0.0002)	-0.0887** (0.0002)
<i>IFSB</i>	-	0.0583** (0.0005)	0.0560*** (0.0004)
<i>Musharakah</i>	3.0271*** (0.0003)	1.2766** (0.0367)	1.8892** (0.0408)
<i>Equity</i>	0.1366*** (0.0000)	0.0212 (0.5086)	0.0250 (0.2241)
<i>ROE</i>	-0.7371* (0.0000)	-0.2998** (0.0317)	-0.2951** (0.0279)
<i>GDPG</i>	-	-	0.0072* (0.0702)
<i>F- test</i>	8.03***	17.66***	18.21***
<i>Adjusted R<sup>2</sup></i>	0.6304	0.8346	0.8515
<i>Number of banks</i>	78	78	78

This table reports the pooled linear regression results. The dependent variable is total non-performing loans to total assets ratio, and independent variables are defined as follows: *AAOIFI* is a dummy variable equal to 1 if a bank has adopted the AAOIFI standards, otherwise 0; *ACI*, is the percentage of independent board members on the Audit Committee; *AFFL* is the average number of Islamic Industry affiliation of the board; *G\_Own* is the percentage ownership of ordinary shares by government; *GDPG* is the annual GDP growth rate; *INDP* is the percentage of independent directors on the board. *IFSB* is a dummy variable equal to 1 if a bank is a member of IFSB, otherwise 0. *Musharakah* is the total of the Islamic financing under a contract between the Islamic bank and a customer for entering into a partnership in an existing project (or to be established), or in the ownership of a specific asset, either on an ongoing basis or for a limited time, during which a bank enters into particular arrangements with the customer to sell to him/her its share in this partnership until he/she becomes the sole owner of it (diminishing *Musharakah*). Profits are distributed according to the mutual agreement of the parties as stipulated in the contract; however, losses are borne according to the exact shares in the *Musharakah* capital on a pro-rata basis. *Murabahah* is the total Islamic financing under a sale contract, in which the bank sells to a customer a physical asset, goods, or shares already owned and possessed (either physically or constructively) at a selling price that consists of the purchase cost plus a mark-up profit. *ROE* is the return on common shareholders' equity. *Big4* is a dummy variable equal to 1 for the Islamic banks that use PriceWaterhouse, Deloitte, Ernest Young, or KPMG for the external audit and 0 otherwise. *SA* equal to 1 for a bank that uses the SA approach for calculation of OR charge and 0 otherwise. \*, \*\*, and \*\*\* significant at 10, 5 and 1 % level respectively.

## APPENDIX

### Examples of Risk management and Operational risk management disclosure in the Islamic banks annual reports

The Group is committed to complying with internationally established principles and policies in relation to risk management. The group fully subscribes to the guiding principles of risk management for Islamic financial services institutions set down by the Islamic Financial Services Board and the need for a comprehensive risk management and reporting process. (Al Baraka Banking Group, 2016, p. 49)

Group policy dictates that operational functions of booking, recording, and monitoring transactions are carried out by staff independent of the staff initiating the transactions... Internal control policies and procedures dictate the segregation of duties, delegation of authorities, exceptions reporting... separate and independent internal control units carry out ongoing monitoring of day-to-day procedures and ensure key control functions. (Al Baraka Banking Group, 2016, p. 50)

Al Baraka Economic Opportunities and Social Investment Programme: covering community development including financing and investments in projects supporting affordable housing a spectrum of healthcare and related activities, micro, small and medium-sized enterprises... AL Baraka Qard-Hasan programme: covering benevolent loans extended on a charitable or goodwill basis... we have started to priorities working with customers that are adding and retaining jobs and that offer equal opportunities for men and women. (Al Baraka Banking Group, 2016, p. 53)

The Bank's risk management policies, procedures and systems are designed to identify and analyse these risks and to set appropriate risk mitigants and controls. The Bank reviews its risk management policies and systems on an ongoing basis to reflect changes in markets, products, and emerging best practices. (Al Rajhi Bank, 2016, p.116)

An Operational Risk Management Unit (ORMU) has been established within the Credit and Risk Management Group which facilitates the management of Operational Risk within the Bank. ORMU facilitates the management of Operational Risk by setting policies, developing systems, tools and methodologies, overseeing their implementation and use within the business units and providing ongoing monitoring and guidance across the Bank. (Al Rajhi Bank, 2016, p.135)

The bank was keen to diversify those who benefited from the social responsibility programs such as the disabled, the orphans, the unfortunate, the blind, and those with special needs. In addition to supporting education and rehabilitative programme. (Al Rajhi Bank, 2016, p.42)

The Group risk management framework summarizes the spirit behind Basel III, which includes management oversight and control, risk culture, and ownership, risk recognition and assessment, control activities and segregation of duties, adequate information, and communication channels, monitoring risk management activities, and correcting deficiencies. (Bahrain Islamic Bank, 2016, p.94)

The Group cannot expect to eliminate all operational risks, but through a control framework and by monitoring and responding to potential risks, the Group is able to manage all risks. Controls include effective segregation of duties, access, authorization and reconciliation procedures, staff education and assessment processes, including the use of internal audit. (Bahrain Islamic Bank, 2016, p.88)

The Group is committed to avoid recognizing any income generate from non-Islamic sources. Accordingly, all non-Islamic income is credited to a Qard fund account where the Group uses these funds for various charitable purposes. The non-Islamic income includes the penalties charged on late payments for Islamic facilities... The Group discharges its social responsibilities through Zakah and charity fund's expenditures to good faith Qard fund for marriage, refurbishment, medical treatments, etc. (Bahrain Islamic Bank, 2016, p.89)

In line with instruction of Bangladesh Bank, the Bank formed a Risk Management Wing (RMW) to formulate risk assessment and management policies, methodologies, guidelines and procedures for risk identification, risk measurement, risk monitoring, deciding acceptable level of risk and risk controlling. (Islami Bank Bangladesh, 2016, p.261)

The Bank provides services under the umbrella of Rural Development Scheme and Urban Poor Development Scheme. Under Islamic micro-finance, major focus is given on improvement of living standard of poor people. (Islami Bank Bangladesh, 2016, p.239)

The Bank has implemented a detailed operational risk framework in accordance with Basel II guidelines. The operational risk management framework ensures that operational risks within the Group are properly identified, monitored, reported and activity managed... the day-to-day operational risk are also managed through adoption of a comprehensive internal control with multi-layers of defence and dedicated systems and procedures to monitor transactions, positions and documentations as well maintenance of key backup procedures and business contingency plan which are regularly assessed and tested. (Abu Dhabi Islamic Bank PSJC, 2016, p. 80)

The board of directors is responsible for the overall risk management approach and for approving the risk strategies policies and risk appetite. The independent risk control process does not include business risks such as changes in the environment, technology, and industry. These are monitored through the Group's strategic planning process. (Kuwait Finance House, 2016 p. 77)

The Group objective is to manage operational risk so as to balance the avoidance of financial losses and damage to the Group's reputation with overall cost effectiveness and to avoid control procedure procedures that restrict initiative and creativity. The primary responsibility for the development and implementation of controls to address operational risk is assigned to senior management within each business unit. This responsibility is supported by the development of overall Group standards for the management of operational risk in the following areas: requirement of appropriate segregation of duties, including the independent authorization of transactions. (Masraf Al Rayan, 2015, p.85)

The Group is committed to avoid recognizing any income generated from non-Islamic source. Consequently, all non-Islamic income is credited to a charity account and the Group uses these funds for various social welfare activities (Masraf Al Rayan, 2015, p. 66)

The Group discharges its social responsibilities through donations to charitable causes and organizations when profits are reported. (Qatar International Islamic Bank, 2016, p. 97)