

OPERATIONAL RISK IN ISLAMIC BANKS: EXAMINATION OF ISSUES

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ABSTRACT

Operational risk in Islamic banks is significant and become more complicated compared to conventional banks because of their unique contractual features and general legal environment. Specific aspects and diversity of contract could raise the operational risk of Islamic banks. Thus operational risk in financial institution has attracted more attention from the regulators, practitioners and also academics over the last decade. Another reason is due to the huge losses incurred by a number of financial institutions such as Barings, Daiwa and Merrill Lynch as a result of the malfunctioning of their operational risk management. Therefore, this paper will assess key issues in measurement and management of operational risk in Malaysian Islamic banks. Descriptive, analytical, and comparative analyses are used in this paper to discuss the issues of operational risk in Islamic bank through the implications associated with the Islamic banks' operational risk as well as the implications on risk measurement, risk management and capital adequacy. This paper reveals that although basic Basel II core principles of effective banking supervision apply equally well and ideally suit the Islamic banking institutions, risk measurement and risk management practices still need specific adaptations to Islamic banks' operational characteristics. These particularities highlight the unique characteristics of Islamic banks and raise serious concerns regarding the applicability of the Basel II methodology for Islamic banks. Then this paper will fill the gap to the existing literature of operational risk in banking institution especially Islamic banks by showing the needs of specific adaption of operational risk measurement and risk management practices due to the nature of Islamic banks.

Keywords: Capital adequacy standard, Islamic banking, operational risk, risk management

INTRODUCTION

In many countries where Islamic banks coexist with conventional banks, there is a pressure to apply the same regulation for both types of banks and a common legal framework is generally developed. No separate regulatory laws have yet been set to govern the operations of Islamic banks, which have been trying to benefit from the support that the conventional framework can provide. It is common for Islamic banks to operate under the laws governing commercial banks, which in many instances do not support specific or tailored issues that are inherent only to Islamic banking. Iqbal

et al. (1998) suggest a 'functional approach' to regulate financial institutions, where the functions performed by Islamic banks are analyzed and attempts are made to modify regulation in a way to provide them with better support.

In a global world economy, Islamic banks have to face key challenges in order to compete with conventional banks effectively. This implies that Islamic banks will need to follow up quickly and abide international standards as well. For instance, Basel II that set standards for capital adequacy and sound banking practices has become a key stone for safety that reflects supervisory concerns. Therefore, the adoption of international standards by Islamic banks will help enhance their credibility and fuel their growth worldwide.

In line with the developments in the conventional banking system worldwide, the Islamic financial institutions with special reference to Islamic banking institutions are also required to implement the New Basel Capital Accord (Basel II). By adopting Basel II, Sundararajan and Errico (2002) believe that this accord can reflect the Islamic banks' true risk; and Islamic banks can adapt the supervisory regime and enhance market discipline by encouraging sound disclosure of policies. Furthermore, Basel II is a welcome development for Islamic banking since it offers a timely and important opportunity for the IFSB to play its part in the ongoing efforts to strengthen the international financial architecture as well as to promote financial stability and market development of Islamic banking.

The issues of risk measurement are central to adapting the Basel II for both conventional and Islamic banks. Risk measurement is also crucial to an effective disclosure regime that can harness market forces to reinforce official supervision. Among the financial risks faced by a bank is operational risk. Operational risks are related to a bank's organization and functioning, including computer-related and

other technologies, compliance with bank policies and procedures, and measures against mismanagement and fraud (Van Greuning & Iqbal, 2008). Unlike market and credit risk, which tend to be isolated in specific areas of our business, operational risk are inherent in all business processes.

In Basel II, operational risk is given particular emphasis, i.e. it should be measured using statistical models. While basic Basel II core principles of effective banking supervision apply equally well to Islamic banks, risk measurement and risk management practices still need specific adaptations. Then it could recognize the characteristics of Islamic banks, disclosure of risk profile, and risk management. This will set the stage for adopting more advanced capital measurement of Basel's approaches but tailored to the specific Islamic banks' operational characteristics.

Therefore, this paper will assess key issues in measurement and monitoring of operational risk in Malaysian Islamic banks. The aim of this paper is to give a unified knowledge on operational risk. In particular, this paper will identified the behavioral implications associated with the Islamic banks' operational risk as well as the implications on risk measurement, risk management, capital adequacy and supervision.

The rest of the study is structured as follows. Section two appraises the conceptual framework of banking risk. Section three reviews the nature of operating risk in greater detail. Section four discusses the operational risk exposure of Islamic banking institutions that arises from the different nature of the financing and investment activities of the banks. This section also provides a sample calculation of operational risk of Islamic banks. Section five will examines specific issues of the Islamic banks' operational risk, and section five concludes.

CONCEPTUAL FRAMEWORK

Risks in Islamic banks

The concept of risk in Islamic banking and finance could be best understood when viewed from two dimensions: (a) prohibition of *gharar* and (b) freedom of contract. According to *shariah* (*shariah* law), *gharar* is any elements of chance involving asymmetric information, uncertainty, risk or even speculation leading to illicit profits, such as is excluded by the religious and consequently by the mortal percepts of Islam. Islam offers full freedom of contracts to economic agents as long as the resulting contract is within the boundaries defined by *shariah* which mainly exclude *riba* and *gharar*. Given the freedom of contracts and the understanding of *gharar*, Islam fully recognizes risk generated by financial and commercial factors and elements extrinsic to the formation of the business. Among the Islamic financing methods and financial products which involve risks are *murabahah* (cost-plus sale),¹ *bay' muajjal* (deferred-payment sale), *bay' as-salam* (advance purchase), *bay' istijrar* (supply sale), *ijarah* (leasing), *istisna'* (purchase order), *mudharabah* (profit-sharing), and *musharakah* (profit and loss- sharing).²

In conventional banks, depositors have a fixed claim upon the bank's assets, according to predetermined interest rates together with a return of their capital. The conventional bank must therefore service its obligations to depositors irrespective of its actual profitability (realized profit). Consequently, any uncertainty in the income streams generated by and change in the value of the bank's assets is borne by the shareholders alone. Islamic banks, in contrast, are structured on the principle of risk sharing. This applies to the sources of fund and may also apply to the uses of fund.

¹ See Securities Commission (2010) for detail definition on *shariah* principles and concepts.

² See Huq and Parveen (2006) for detail discussion on Islamic financial products and risk associated with them.

With respect to *mudharabah*, holders of profit sharing investment accounts (which take the place of conventional interest bearing bank deposit accounts) are essentially stakeholders with a type of limited term equity investment. The return on their investment in the bank is uncertain, since they share in the profit generated by the bank alongside the shareholders. This also exposes the investment account holders to the risk of losing any or all of their initial investment.

Risk management

Risk management is now recognized as a key activity for all corporations; banks, financial institutions, and others. Many of the disastrous losses of the 1990s would have been avoided if good risk management practices had been in place. There are two general approaches to risk management strategies for bank as well as other organization, i.e. risk decomposition and risk aggregation. The former involves managing or identifying risks one by one and handle each one separately. The latter involves reducing risks through risk diversification. In practice, banks used both approaches when they manage market and credit risks.

The ability of a bank to absorb unexpected losses, i.e. risks is critically dependent on the amount of equity and other forms of capital held. Capital is a cushion to protect the bank from an extremely unfavorable outcome. Banks are often subject to banking regulations, which are mainly designed to protect depositors and ensure a stable banking and financial system by setting capital requirements for banking institutions based on international standards, for instance the Basel II capital requirements.

Basel II is based on three “pillars”. In Pillar 1, the minimum capital requirement for credit risk in the banking book is calculated in a new way that reflects the credit ratings of counterparties. The general requirement in Basel I that banks hold a total capital equal to 8% of risk-weighted assets remain unchanged. The capital requirement for market risk is also remains unchanged from the 1996 Amendment.³ However, there is a new capital charge for operational risk. A risk-weighted asset for operational risk is defined as 12.5 times the calculated operational risk capital.

³ In 1995, the Basel Committee issued a consultative proposal to amend the 1988 Accord. This became known as the “1996 Amendment” which requires financial institutions to hold capital to cover their exposure to market risks as well as credit risks. It was implemented in 1998.

Pillar 2, which is concerned with the supervisory review process allows regulators some discretion in how rules are applied but seeks to achieve overall consistency in the application of the rules. It places more emphasize on early intervention when problem arise. Supervisors are required to do far more than just ensure that the minimum capital required under Basel II is held. Part of their role is to encourage banks to develop and use better risk management techniques and to evaluate these techniques.

Pillar 3, which is concerned with market discipline, requires banks to increase disclosure to the market of their risk assessment procedures and capital adequacy. In addition, in some instances, banks will have to increase their disclosure in order to be allowed to use particular methodologies for calculating capital. The banks will be subjected to added pressure to make sound risk management decisions if shareholders and potential shareholders have more information about those decisions.

OPERATIONAL RISK

The concept

Operational risk is often considered as a residual risk given the fact that any risk faced by a bank that is not market risk or credit risk falls under this category. To produce an estimate of operational risk, we could then look at the bank's financial statements and remove from the income statement (a) the impact of credit losses and (b) the profits or losses from market risk exposure. The variation in the resulting income would then be attributed to operational risk. Operational risk is the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events (Basel Committee on Banking Supervision, 2001). This definition

includes legal risk,⁴ but does not include reputational risk⁵ or the risk resulting from strategic decisions. Some operational risks result in increases in the bank's operating cost or decreases in its revenue. Other operational risks interact with credit and market risk.

The Basel Committee on Bank Supervision (2001) has identified seven categories of operational risk associated with:

- i. Internal fraud: an act of a type intended to defraud, misappropriate property or circumvent regulations, the law or company policy, excluding diversity/discrimination events which involve at least one internal party.
- ii. External fraud: an act of a type intended to defraud, misappropriate property or circumvent the law by a third party.
- iii. Employment practices and workplace safety: an act inconsistent with employment, health or safety laws or agreements from payment of personal injury claims or from diversity/ discrimination events.
- iv. Client, products and business practices: an unintentional or negligent failure to meet a professional obligation to specific client (including fiduciary and suitability requirement) or from the nature or design of a product.
- v. Damage to physical assets: the loss or damage to physical assets from natural disaster or other events.
- vi. Business disruption and system failures: disruption of business or system failures.
- vii. Execution, delivery and process management: failed transaction processing or process management from relations with trade counterparties and vendors.

⁴ Legal risk is the risk of loss resulting from failure to comply with laws as well as prudent ethical standards and contractual obligations. It includes the exposure to litigation from all aspects of an institution's activities.

⁵ Basel II, paragraph 644. Working Paper on the Regulatory Treatment of Operational Risk (2001).

The financial impact associated with an operational event that is recorded in the institution's financial statements consistent with "Generally Accepted Accounting Principles". Financial impact includes all out of pocket expenses associated with an operational event but does not include opportunity costs, foregone revenue, or cost related to investment programs implemented to prevent subsequent operational risk losses. Most banks have always had some framework in place for managing operational risk. However, the prospect of new capital requirements has led them to increase greatly the resources they devote to measuring and monitoring operational risk.

Basel II requires banks to keep capital for operational risk in addition to improving the way banks calculate credit risk capital. The regulators are introducing a capital charge for operational risk for three reasons. First, in an increasingly complex environment banks face many risks arising from the possibilities of human and computer error (failure). Second, regulators want banks to pay more attention to their internal systems to avoid catastrophes like that at Barings Bank. Third, the effect of the Basel II credit risk calculation will be to reduce the capital requirements for most banks and regulators want another capital charge to bring the total capital back to roughly where it was before.

The accord asks a minimum capital requirement which has to be detected against credit risk, market risk and operational risk, as well as other type of risks. In particular, it has stated a figure of 12% of minimum capital requirement that would produce a capital amount in line with the operational risk actually faced by large and complex banking institutions. In the same time, it allows different calculation approaches for the regulatory capital, rising in complexity and decreasing in capital requirements. Banks have three alternatives or approaches for determining

operational risk regulatory capital. They are the basic indicator approach (BIA); the standardized approach (STA); and the advanced measurement approach (AMA). The use of these approaches depends on the sophistication of the bank.

Operational risk in Islamic banking institutions

Following Basel II, operational risk is defined as the risk of losses resulting from inadequate or failed internal processes, people and systems or from external events. This includes but is not limited to legal and *shariah* compliance risk, but excludes strategic and reputational risks. Such risks are likely to be significant in institutions offering only Islamic financial services (IIFS) due to specific contractual features and the general legal environment. In addition, the increasing use of structured finance transactions, for instance, securitization of loans originated by banks as a way of risk management of bank's asset could expose banks to additional legal risks. Additionally, failure to comply with *shariah* is also a form of operational risk and if IIFS fail to do so, they will betray the trust of investors and therefore should be responsible for the lost income (El-Hawary et al., 2004). Archer and Abdullah Haron (2007) identify operational risks faced by Islamic banks could be divided into three categories:

- i. Operational risks that are consequential upon various kinds of banking activities, and which are somewhat similar for all financial intermediaries, whether *shariah* compliant or not. However, the asset based nature of financing products in Islamic banking such as *murabahah*, *salam*, *istisna'* and *ijarah* may give rise to forms of operational risk in contract drafting and execution that are specific to such product.

- ii. *Shariah* compliance risk – that is (a) risk relating to potential non-compliance with *shariah* rules and principles in the bank's operations (b) the further risk associated with the Islamic bank's fiduciary responsibilities as *mudarib* (entrepreneur) toward fund providers under the *mudarabah* form of contract according to which in case of misconduct or negligence by *mudarib*. Then, the fund invested by the fund providers become a liability of *mudarib*.
- iii. Legal risks arising either from (a) the Islamic bank's operations or (b) problems of legal uncertainty in interpreting and enforcing *shariah* contracts.

According to Sundararajan (2005), there are specific aspects that could raise operational risks in Islamic banks as follows:

- i. the cancellation risks in non-binding *murabahah* and *istisna'* contracts; (*shariah* non-compliance risk);
- ii. problems in internal control systems to detect and manage potential problems in operational process and back office functions;
- iii. technical risks of various sorts;
- iv. the potential difficulties in enforcing Islamic finance contracts in a broader legal environment; (*shariah* non-compliance risk);
- v. the risk of non-compliance with *shariah* requirements that may impact on permissible income; (*shariah* non-compliance risk);
- vi. the need to maintain and manage commodity inventories often in illiquid markets;
- vii. the potential costs and risks in monitoring equity type contracts and the associated legal risks; and

viii. increasing use structured finance transactions – specifically, securitization of loans originated by banks to manage risks on the asset side could expose banks to additional legal risks.

Islamic Financial Services Board's (IFSB's) Published Standard No. 2 recommends that the proposed measurement of capital to cater for operational risk in IIFS may be based on either the BIA or STA. Under the BIA, a fixed percentage of 15% of annual average gross income, averaged over the previous three years, is set side. Under the STA, this percentage varies according to the business lines from 12% to 18%.⁶ It is further recommended that due to different structure of business lines for IIFS, at the present stage, the former to be used by IIFS.

METHODOLOGY: BASEL II APPROACH FOR CALCULATION OF OPERATIONAL RISK CAPITAL CHARGE

Given the complexity of operational risk, it is difficult to quantify it. Most of the operational risk measurement techniques are simple and experimental. The banks, however, can gather information of different risks from reports and plans that are published within the institution (like audit reports, regulatory reports, management reports, business plans, operation plans, error rates, etc.) A careful review of these documents can reveal gaps that can represent potential risks. The data from the reports could be categorized into internal and external factors and converted into likelihood of potential loss to the institution.

Accurate determinations of banks' risks are highly recommended by Basle II. This concerns, in particular, operational risks, which are all those management events that may determine unexpected losses. It is necessary to develop valid model or

⁶ 12% for retail banking, asset management and retail brokerage, 15% for commercial banking and agency services, and 18% for corporate finance, trading and sales, and payment and settlement.

approach to measure, and consequently, predict such operational risks. Table 1 demonstrates Basel II approaches for operational risk measurement.

Table 1: Basel II Approach for Calculation of Operational Risk Capital Charge

Approaches	Measurement	Formula
Basic Indicator Approach (BIA)	Percentage of gross income (GI) for the whole bank	$K_{BIA} = [\sum (GI_{1..n} \times \alpha)] / n \quad \alpha = 15\%$
Standardized Approach (STA)	Percentage of gross income (GI) per business line	$K_{STA} = \{\sum_{year\ 11-3} \max [\sum (GI_{1-8} \times \beta_{1-8})] / 3$
Advance Measurement Approach (AMA)	model-like approach on framework of business lines and risk event types	$K_{AMA} = \sum_{i,j} \gamma_{ij} * PE_{ij} * LGE_{ij} * EI_{ij}$ (example AMA : parameters to be determined by the bank)

(Source: Basel II, 2006)

Bank using the **Basic Indicator Approach** have to hold capital for operational risk equal to a fixed percentage (denoted *alpha* (α)) of a single indicator. The current proposal for this indicator is gross income. The charge may be expressed as follows:

$$K_{BIA} = [\sum (GI_{1..n} \times \alpha)] / n$$

where,

K_{BIA} = the capital charge under the Basic Indicator Approach

GI = annual gross income, where positive, over the previous three years

n = number of the previous three years for which gross income is positive

α = 15% which is set by the Committee, relating the industry wide level

of required capital to the industry wide level of the indicator.

In the **Standardized Approach**, bank's activities are divided into eight business lines. Within each business line, there is a broad indicator specified that

reflects the size or volume of banks' activities in that area. The indicator serves as proxy for the scale of business operations and thus the likely scale of operational risk exposure within of these business lines.

Table 2: *Beta* Factors in Standardized Approach

Business Lines	Indicator	<i>Beta</i> Factors (%)
Corporate Finance	Gross income	$\beta_1 = 18\%$
Trading and Sales	Gross income	$\beta_2 = 18\%$
Retail Banking	Gross income	$\beta_3 = 12\%$
Commercial Banking	Gross income	$\beta_4 = 15\%$
Payment and Settlement	Gross income	$\beta_5 = 18\%$
Agency Services and Custody	Gross income	$\beta_6 = 15\%$
Asset Management	Gross income	$\beta_7 = 12\%$
Retail Brokerage	Gross income	$\beta_8 = 12\%$

(Source: Basel II, 2006)

Within each business line, the capital charge is calculated by multiplying the indicator by a factor (denoted *beta* (β)) assigned to that business line. β set by Basel II's Committee and serves as a rough proxy for the industry-wide relationship between the operational risk loss experience for a given business line and the aggregate level of the indicator for that business line. It should noted that the indicator relates to the data reported to the business line, not the whole institution, e.g. in corporate finance, the indicator is the gross income generated in the corporate finance business line. If a bank is unable to allocate an activity to a particular business line, it is proposed that income related to that activity should be subject to the highest β factor for which the bank reports activity. One of the main weaknesses of this approach is the issue of negative income. As mentioned by Archer and Abdullah Haron (2007), a negative capital charge in any one year for one business line is offset against the positive capital charges for the other business lines in that year, unless the total for the year is negative, in which case the input of the year to the three-year calculation is zero.

The total capital charge is calculated as the simple summation of the regulatory capital charges across each of the business lines. The total capital charge may be expressed as follows:

$$K_{STA} = \{\sum_{year\ 1-3} \max [\sum (GI_{1-8} \times \beta_{1-8})] / 3$$

where:

K_{STA} = the capital charge under the Standardized Approach

GI_{1-8} = annual gross income in a given year, as defined above in the Basic Indicator Approach, for each of the eight business lines

β_{1-8} = a fixed percentage, set by the Committee, relating the level of required capital to the level of the gross income for each the 8 business lines.

The **Advance Measurement Approach** (AMA) is the most risk sensitive of the approaches currently being developed for regulatory capital purpose (Basel II, 2001). The regulatory capital requirement for the operational risk under AMA would be based on operational risk derived from the bank's internal risk measurement system. This risk estimate would be subject to a floor based on the Standardized Approach capital charge for operational risk. Thus, under the AMA bank would be allowed to use the output of their internal operational risk measurement system, subject to qualitative and quantitative standards set by Basel II's Committee. While the institution may use multiple tools in an AMA framework, they must all have the same objective of identifying key risks. The three broad types of AMA approach currently under development, which comprises of three different approaches, namely Internal Measurement Approach (IMA),⁷ Loss Distribution Approach (LDA)⁸ and Scorecard Approaches.⁹

⁷ In this type of approach, banks generate estimates of operational risk capital based on measures of expected operational risk losses. The approach assumes a fixed and stable relationship between expected losses (the mean of the loss distribution) and unexpected losses (the tail of the loss distribution). The IMA

OPERATIONAL RISK IN ISLAMIC BANKS: EXAMINATION OF ISSUES

Category of operational risk

Islamic banks' activities differ in substance and in form from conventional banks' operations. The implication arise is a different risk profile faced by the former. Basel II identified three types of risk exposures for conventional banks: credit risk, market risk and operational risk. Early attempts by Islamic scholars to cater for the specificities and characteristics of *shariah* compliant products and services identified at least four different types of risks that are not accounted for under Basel II (Chapra & Khan, 2000). The additional risks identified include rate of return risk, price risk, fiduciary risk and displaced commercial risk. The IFSB further released a standard for the "Guiding Principles of Risk management for Institutions Offering Only Islamic Financial Services (2005b)" which documented six risk categories in Islamic financial institutions: credit risk, equity investment risk, market risk, liquidity risk, rate of return risk and operational risk.

Operational risk refers to the loss potential resulting from inadequate or failed internal processes, people, systems or from external events. In capital adequacy standard (CAS) framework, operational risks specifically address losses resulting from *shariah* non-compliance and the failure in fiduciary responsibilities. Fiduciary risk is the risk that arises from the Islamic banks' failure to perform in accordance with explicit and implicit standards applicable to their fiduciary responsibilities

calculations are generally based on a framework that divides a bank's operational risk exposures into a series of business lines and operational risk event types (Basel II, 2001).

⁸ This approach involves estimating two distributions: one for frequency and one for event severity. The LDA follows an actuarial methodology where the distributions are constructed based on historical internal and external loss data. This method differs from IMA approach in one important respect: it aims to assess unexpected losses directly rather than via an assumption about the relationship between expected loss and unexpected loss (Basel II, 2001).

⁹ In this approach, bank determine an initial level of operational risk capital at the firm or business line level, and then modify over time on the basis of risk indicator. The scorecard approach combines loss data with risk indicators and performs a self-assessment of the potential operational risk on the business lines (Akkizidis & Bouchereau, 2005). This approach relies less exclusively on historical loss data in determining capital amounts (Basel II, 2001).

(IFSB, 2005b). As a result of losses in investments, Islamic banks may become insolvent and therefore unable to meet the demands of current holder for repayment of their funds and safeguard the interest of their investment account holder (IAH). Islamic banks may fail to act with due care when managing investment, resulting in the risk of possible forgone profit to IAH. Here again, new operational risks are identified for the specificities of Islamic banks and which are not catered for under Basel II.

Iqbal and Mirakhor (2007) point out that fiduciary risk leads to the risk of facing legal recourse action in a situation where the Islamic banks breach their fiduciary responsibility toward depositors and shareholders. As fiduciary agents, Islamic banks are expected to act in the best interest of investors/depositors and shareholder. If there is divergence in the objectives of investors and the shareholders, the banks then are exposed to fiduciary risk. For instance, in the case of a partnership-based investment in the form of *mudharabah* and *musharakah* on the assets side, the banks are expected to perform adequate screening and monitoring of projects. For any deliberate or even non-deliberate negligence in evaluating and monitoring the projects can lead to fiduciary risk. It becomes incumbent upon management to perform due diligence before committing the investors'/depositors' funds.

Compliance to *shariah* is one of the prerequisite of Islamic banking operation. Failure to adhere to *shariah* can expose financial institutions to further reputational risks. Both the management of IIFS and the supervisory authorities need to ensure that proper measurement and management of such risks are in place. The risk of non-compliance with *shariah* requirements that may result in non-recognition of income

and resultant losses will also lead to operational risk¹⁰. According to Archer and Abdullah (2007) *shariah* compliance is critical to an Islamic bank's operation, and such compliance requirements must permeate throughout the organization as well as its products and activities. As majority of fund providers use *shariah*-compliant banking services as a matter of principle, their perception regarding the Islamic bank's compliance with *shariah* rules and principle is likely to be of great importance in maintaining their customer loyalty. In this regard, *shariah* compliance fall within a higher-priority category compared to other identified risks. However, it should be noted that reputational risk which is closely related to *shariah* compliance (Archer & Abdullah, 2007), falls outside the Basel II definition of operational risk.

Besides of *shariah* non-compliance risk and fiduciary risk, Islamic banks are also exposed to unique and high risks, in particular legal and reputational risks (Fiennes, 2007). According to Iqbal and Mirakhor (2007), legal risks due to non-standard practices come into view because of different contracts in different jurisdictions. Different adoption of *shariah* rules sometimes will results in difference financial reporting, auditing and accounting treatments by Islamic banks. For instance, while some *shariah* scholar consider the terms of a *murabahah* or *istisna'* contract to be binding on the buyer, other argue that the buyer has the option to decline even after placing the order and paying the commitment fee. While each practice is acceptable by different school of thoughts, the bank's risk is higher in non-binding cases and it may lead to potential problems in cases of unsettled transaction. For instance in Malaysia, there were thirteen (13) cases on *al-bay' bithamanan ajil* (BBA) known as deferred-payment sale property financings except one that were decided in the High Court of Malaya on 18 July 2008 that not in favour of the Islamic

¹⁰ Inadequately trained staff in *shariah* aspect also will expose the Islamic bank unnecessarily to such operational risk

Banking Institutions (IBIs).¹¹ The judgments were made by High Court may effect the whole IBIs because it consider the Islamic banks may only claim the principal sum and not the profit portion. The judgment that made by Judge Datuk Abdul Wahab bin Patail in this cases are closely related to different interpretation of any recognized *mazhabs*.¹²

In many western countries, the fact that the documentation is new and not well-tested in the courts adds to the legal risk (Fiennes, 2007). There is also the question of the interaction of commercial law with *shariah*. If they conflict, there is at least the possibility that the defaulting party can try to evade his responsibility by claiming non-compliance with *shariah*. For example in the UK, the courts were not impressed with the enforceability of the *shariah* law on top of English Law.¹³

¹¹ Please refer cases of *Arab-Malaysian Finance Bhd v Taman Ihsan Jaya Sdn Bhd & Ors* (Suit No D4-22A-067 of 2003), *Bank Islam Malaysia Bhd v Ghazali bin Shamsuddin & Ors* (Suit No D4-22A-215 of 2004), *Bank Islam Malaysia Bhd v Nordin bin Suboh* (Suit No D4-22A-1 of 2004), *Bank Islam Malaysia Bhd v Peringkat Raya (M) Sdn Bhd & Ors* (Suit No D4-22A-185 of 2005), *Bank Islam Malaysia Bhd v Ramli bin Shuhaimi & Ors* (Suit No D4-22A-399 of 2005), *Bank Islam Malaysia Bhd v Mohammad Rizal bin Othman & Ors* (Suit No D4-22A-192 of 2006), *Banks Islam Malaysia Bhd v Azhar bin Osman* (Originating Summons No D4-22A-395 of 2005), *Banks Islam Malaysia Bhd v Mohd Razmi bin A. Rahman & Ors* (Writ No D4-22A-166 of 2006), *Banks Islam Malaysia Bhd v Nadiah Chai binti Abdullah & Ors* (Writ No D4-22A-204 of 2006), *Banks Islam Malaysia Bhd v Nor Azlina binti Baharom* (Writ No D4-22A-167 of 2006), *Banks Islam Malaysia Bhd v Zawawi bin Osman & Ors* (Writ No D4-22A-178 of 2006), *Banks Islam Malaysia Bhd v Baharom bin Harun & Ors* (Writ No D4-22A-203 of 2006). Refer also [2008] 5 MLJ 631 and *Islamic Banking: Perspectives on Recent Case Development*, Fakhiah Azahari [2009] 1 MLJA 91.

¹² This Court holds that neither the Federal Constitution nor Islamic Banking Act (IBA) 1983 and the Banking and Financial Institution Act (BAFIA) 1989 in using terms “Islam” and “religion of Islam” provide as the interpretation of which mazhab of Islam is to prevail. The BBA facilities are offered as Islamic to all Muslim and not exclusively to followers of any particular mazhab. It follows, therefore that the test is that there must be no element involved that is not approved by the religion of Islam under the interpretation of any recognized *mazhabs*. Thus, the fact that the reading of the Property Purchase Agreement (PPA) and Property Sale Agreement (PSA) independently is not accepted under other mazhabs even though it accepted under mazhab Syafie means that PPA and PSa cannot be read independently for the purpose of IBA 1983 and the BAFIA 1989. On 31 March 2009, the Court of Appeal has made the judgment that in favour of IBIs which mean contrary to earlier High Court judgment. The Court of Appeal also reiterated that BBA contract is a sale transaction and therefore must not be compared to a loan transaction. The decision reaffirmed that Bank Islam’s practices in relation to BBA contracts are shariah-compliant and valid.

¹³ This case, *Shamil Bank of Bahrain E.C. (Islamic Bankers) v Beximco Pharmaceuticals Ltd and Others*, 2004. The governing law of the agreements was stated to be “subject to the principles of Glorious shariah, this agreement shall be governed by and construed in accordance with laws of England”. The High Court Judge granted summary judgment according to English law and held that the court was not concerned with the principles of the *shariah* at all, and “there could not be two

Besides *shariah* non-compliance risk and legal risk, Islamic banks are exposed to reputational risk even though Basel II and IFSB not include this risk in their definition of operational risk.¹⁴ Reputational risk is closely interrelated with fiduciary and *shariah* non-compliance risk. In the case of heavy losses on the investment financed by current account holders' funds due to negligence and non-compliance with *shariah* principle, the depositors may lose confidence towards the Islamic bank and therefore this will affect depositors' confidence on the banks' credibility. This situation can lead to dire consequences, including withdrawal depositors' fund and insolvency risk.

Reputational risk therefore can be defined as the risk of deteriorating trust of Islamic banks' clients due to irresponsible actions or mismanagement behaviour. Although the fiduciary and *shariah* non-compliance risks also stem from the negligence and non-compliance, reputational risk arises due to irresponsible behavior by a single institution can taint the reputation of overall Islamic banking industry. Negative publicity can have a significant impact on institutions' market share, profitability and liquidity. Nevertheless, close collaboration among financial institutions, standardization of contracts and practices, self-examination and establishment of industry association are some of the steps to mitigate reputational risk.

Regulatory capital for operational risk

a. The Basel capital adequacy framework (Basel I and Basel II)

separate systems of law governing the contract (i.e. Shariah law and English law)" (DeLorenzo & McMillen, 2007).

¹⁴ Fiennes (2007) includes reputational risk as a part of operational risk , Archer and Abdullah (2007) remark that reputational risk relating to *shariah* non-compliance risk

Under the Basel I, the Committee recognizes that the capital buffer related to credit risk implicitly covers other risk. The broad brush approach in Basel I delivered an overall cushion of capital for both the measured risk (credit and market) and other (unmeasured) banking risk. However, the New Basel Capital Accord (Basel II) is focusing on sensitive risk other than credit and market risk. Further, developing banking practices such as securitization, outsourcing, specialized processing operations and reliance on rapidly evolving technology and complex financial products and strategies suggest that these other risks are increasingly important factors to be reflected in credible capital assessments by both supervisors and banks. Therefore, in Basel II includes the operational risk as residual risks.

Basel II departs from the Basel I in several important aspects. In the Basel II, a risk that has not previously been measured is added; operational risk. Additionally, if the national supervisor approves a bank's models to measure operational and other risks, the bank will be allowed to use them to determine its own amount of regulatory capital. In Basel II, the incentives to reward banks that possess such models are built in the form of reductions in levels of regulatory capital, which can lead to more capital at work and hence a higher yield. Therefore, Basel II introduces approaches for operational risk that have not been measured before.

The rising interest of supervisor and banking industry in the recent years for operational risk is due to the growth of e-commerce, large-scale mergers and acquisitions and the use of more highly automated technology which test integrated system and provoke a number of situations increasing operational risks.

Basel II uses a three pillars concept (i) minimum capital requirement (addressing risk), (ii) supervisory review and (iii) market discipline – to promote

greater stability in the financial system.¹⁵ The three pillars of the Basel II play an important role in the capital framework for operational risk. The **Pillar I** presents the calculation of the total minimum capital requirement for credit, market and operational risk. The capital ratio is calculated using the definition of regulatory capital and risk weighted assets.¹⁶ The capital ratio must be no lower than 8%. It deals with maintenance of regulatory capital calculated for three major components of risk that a bank faces: credit risk, operational risk and market risk. The capital adequacy ratio (CAR) as stipulated by Pillar 1 of Basel II is as follows:

$$CAR = \frac{Tier\ 1 + Tier\ 2}{Risk-Weighted\ Assets_{(Credit\ Risk + Market\ Risk + Operational\ Risk)}}$$

The **Pillar II** deals with the regulatory response to the first pillar, giving regulators much improved ‘tools’ over those available to them under Basel I. It also provides a framework for dealing with all the other risks a bank face, such as systemic risk, pension risk, concentration risk, strategic risk, reputation risk, liquidity risk and legal risk, which the accord combines under the title of residual risk. The Pillar II of the Basel II recognizes the supervisory review process as an integral and critical component of the capital framework. Pillar II sets out a framework in which banks are required to assess the economic capital they need to support their risk. Then, this process of assessment is reviewed by supervisors. Where the capital

¹⁵ The Basel I accord dealt with only parts of each of these pillars. For example: with respect to the first Basel II pillar, only one risk, credit risk was dealt with in a simple manner while market risk was an afterthought; operational risk was not dealt with at all.

¹⁶ Risk weighted assets are determined by multiplying the capital requirement for market risk and operational risk by 12.5% (i.e. the reciprocal of the minimum capital ratio of 8%) and adding to resulting figures of the sum of risk- weighted assets for credit risk.

assessment process is inadequate and/or the allocation insufficient, supervisors will expect a bank to take prompt action to correct the situation.

Supervisor will review the inputs and assumptions of internal methodologies for operational risk in the context of the firm wide capital allocation framework. The failure to manage properly operational risk can result in a misstatement of an institution's risk- return profile and expose the institution to significant losses. A bank should develop a framework for managing operational risk and evaluate the adequacy of capital given in the framework. The framework should cover the bank's appetite and tolerance for the operational risk, as specified through policies for managing this risk, including the extent and manner in which operational risk is transferred outside the bank. It should also include policies outlining the bank approach to identifying, assessing, monitoring and controlling/mitigating the risk.

Then the **Pillar III** greatly increases the disclosures that the bank must make. This is designed to allow the market to have a better picture of the overall risk position of the bank, allow the counterparties of the bank to price and deal appropriately. It has the potential to reinforce capital regulation and other supervisory efforts to promote safety and soundness in bank and financial system. Market discipline imposes strong incentive on bank to conduct their business in a safe, sound and efficient manner. It can also provide a bank with an incentive to maintain a strong capital base as a cushion against potential future losses arising from its risk exposures. To promote market discipline, bank should publicly and in a timely fashion, disclose detailed information about the process used to manage and control their operational risk and the regulatory capital allocation technique they use.

Under the standardized framework, Basel II sets clear guidelines for the calculation of adequate bank capital for operational risk. The balance sheet

underlying the rules of the accord, however, belongs to a conventional bank whose structure as well as nature completely differs from that of an Islamic bank, both in terms of assets and liabilities. No specific requirements addressing the particularity of Islamic banks' balance sheet structure were introduced under Basel II.

Recent studies on risk issues in Islamic banking and finance stress that features of Islamic banking institutions and the intermediation models that they follow require recognition of special risks to help make risk management in Islamic banking truly effective. As a result of the particular nature of Islamic banking activities, the risks borne by these institutions differ to a greater or lesser extent from those outlined in Basel I and II. Chapra and Khan (2000), and Khan and Ahmed (2001) acknowledge Basel II for providing scope for proper recognition of risks in Islamic banking products through a more risk sensitive system for risk weighting assets and stronger incentives for effective risk management. In similar vein, El-Hawary et al. (2004) recognize the appropriate balance of prudential supervision (Pillar II) and market disciplines (Pillar III) of Basel II for Islamic banking institutions. Based on both of the pillars, risk measurement and management becomes a crucial element to produce an effective disclosure regime that can connect market forces to reinforce official supervision.

Given the importance of adaptation of more advanced capital measurement approaches as envisaged in Basel II, serious attempts are made by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and the IFSB to develop a better capital adequacy standard/framework that addresses the risk profile of Islamic banks.

b. AAOIFI proposal

In 1999, AAOIFI issued the '*Statements on the Purpose and Calculation of the Capital Adequacy Ratio for Islamic Banks*' due to risks that arise from Islamic banks' operations differ from the conventional risks faced by their peers and are not accounted for in Basel II the (AAOIFI, 1999). This was the first initiative towards developing a tangible framework that properly addresses the risks faced by Islamic banks. The document proposed a method for calculating the capital adequacy ratio for Islamic banks. Much of the suggested methodology is based on Basel II standards with the key difference relating to the liability side of Islamic banks' balance sheet (Turk & Sariaeddine, 2007).

Islamic banks fund their financing and investment activities through three types of accounts in addition to shareholders' equity: current, saving and unrestricted investment accounts. The current and saving accounts are very much similar to conventional banks but the investment account requires less protection as their held on a profit and loss sharing basis. Investment accounts of Islamic banking institutions are of two types, namely restricted and unrestricted. The former cannot be considered as part of banks' source of funds since this type of funds are invested according to clients' directives and not at the discretion of the banks. Therefore, AAOIFI recommends that restricted investments accounts be included as off-balance sheet items. The implication is that such investment funds will not be included in the calculation of CAR. On the contrary, the latter should be included on the balance sheet of Islamic banks and have to be considered in the calculation of CAR.

Another difference or particularity of Islamic banks' activities is that the unrestricted investment account holders agree to share in the profit and loss with the bank. This implies that such funds could not be guaranteed by assigning them 100%

weight in calculating the CAR. This is the reason why AAOIFI proposed this capital adequacy framework which is to address this issue and to determine appropriate risk weights to unrestricted investment.

In addition, although unrestricted investment account holders share risks with shareholders, their fund cannot be considered as equity. The rationale is that investment depositors can withdraw their funds upon maturity and reduce the sources of funds available to the bank, but the equity base remains unchanged if shareholders withdraw their funds by selling their shares to other investors. Furthermore, unrestricted investment accounts also cannot be classified under equity or Tier 1 capital is that such account bearers have no voting rights (Turk & Sarieddine, 2007). In conclusion, unrestricted investment accounts lie in between deposits and equity, and they should properly acknowledge for capital adequacy purposes. Therefore, AAOIFI proposed a risk-sharing scheme between the investment account holders and the shareholders in the calculation of CAR of Islamic bank (Source: AAOIFI, 1999):

$$CAR = \frac{\text{Total Capital}}{RWA_{(Capital\ and\ Current\ Accounts)} + 50\%(RWA_{(Unrestricted\ Investment\ Accounts)})}$$

The limitation of the approach developed by AAOIFI is that it has basic similarities with Basel II and it simply focuses on the sources of funds of the Islamic banks, thus, ignoring the importance of detailing the calculation of risk weighted assets.

c. *IFSB capital adequacy standard and operational risk management*

IFSB released an Exposure Draft Number 2 in 2005 focusing the suggestion for introducing the CAS for IIFS.¹⁷ This proposal recommended a capital adequacy standard based on the Basel II with the necessary modifications and adaptations to cater for the specifications and characteristics of the *shariah* compliant products and services. The document encompasses the minimum capital adequacy requirements based predominantly on the standardized approach with respect to credit risk and the basic indicator approach with regard to operational risks of the Islamic financial services (Pillar I) and the various applicable measurement methods for market risk set out in the 1996 Market Risk Amendment. This document does not address the requirements covered by Pillar II (supervisory review) and Pillar III (market discipline) of Basel II as these two issues will be covered by separate standards.

Like the AAOFI proposal, the IFSB capital adequacy framework serves to complement the Basel II in order to cater for the specificities of Islamic banking institutions. However, while the AAOIFI focuses on the sources of funds of an Islamic bank, IFSB goes a step further by considering the uses of funds and assigning appropriate risk weights to each asset item. The major contribution of the IFSB is to acknowledge that the uses of funds for Islamic banks, which are by nature *shariah* compliant, differ from the typical asset side of the balance sheet of a conventional bank. Additionally, the provisions for operational risk and the treatment of profit sharing investment account (PSIA) are also justified.¹⁸

For instance, the assets funded by either unrestricted or restricted investment accounts should be excluded from the calculation of CAR since the capital is not

¹⁷ The term “IIFS” as used in the Exposure Draft Number 2 refers to such financial institutions that mobilize funds as deposits and investment accounts in accordance with *shariah* rules and principles.

¹⁸ The PSIA (commonly referred to as investment accounts and special investment accounts) is a pool of investment funds placed with an IIFS on the basis of *mudharabah* and can be categorized on unrestricted PSIA or restricted PSIA.

guaranteed by bank and any losses are to be borne by the investment account holders, and thus do not command a regulatory capital requirement. The calculation of CAR is as follows (Source: IFSB, 2005a):

$$CAR = \frac{\text{Tier 1} + \text{Tier 2}}{RWA_{(Credit Risk + Market Risk + Operational Risk)} - RWA_{funded by PSIA_{(Credit Risk + Market Risk)}}$$

Thus, under the CAS framework, the IIFS's minimum capital requirement is assessed according to their exposure to credit risk, market risk and operational risk. Within this context, the IFSB has proposed two different methods to fine-tune the IIFS capital charges to better reflect financial risk diversities among individual credit exposures: a standardized and an internal ratings-based approach to credit risk. The standardized approach to credit risk is based on externally provided risk assessments such as the rating assignments by external credit assessment institutions. IIFS is also encouraged to utilize the internal model of risk assessments (self-assessments). Value-at-risk approach is used to measure market risk, whilst BIA, STA as well as AMA approach are used to measure operational risk.

The introduction of CAS attracts the interest of many researchers. The interest focuses on two aspects. First, the introduction of capital adequacy standard should address the supervisory review and market discipline, (see, Kahf (2005) and Hassan and Dicle (2005), El-Hawary et al. (2004), and Sundararajan and Errico (2002)). It is due to the different nature of risks and limited capacity for risk mitigation in IIFS. The second aspect is the specific characteristics of Islamic banks. As argued by Khaf (2005), there are qualitative similarities of treatment of credit risks between conventional and Islamic banks in Basel II, yet highlights issues that need special

attention with regard to Islamic banks. Concerning unrestricted deposits, they should be related as equity, and the capital requirement for operational risk should be lower as these will be shared between equity holders and owners of unrestricted deposits.

Appropriateness of gross income as proxy for calculation of operational risk capital charge

Due to the fact that Islamic banking institution' shareholders should be liable for any losses due to operational risk and the bank capital charged for it, therefore this type of risk should be measured carefully. The three methods of measuring operational risks proposed in Basel II (Section 4) would need considerable adaptations in Islamic banks owing to the specificities noted earlier.

Allocating capital based on simple aggregate activity measures such as BIA and STA, fails to distinguish between well-run and poorly run units. However, these approaches are not out of line with the practice in many internal efforts to allocate economic, as opposed to regulatory capital (Harmantzis, 2003).

BIA approach uses a gross income as a proxy measure of exposure to operational risk. According to Archer and Abdullah Haron (2007) it requires banks to hold capital for operational risk equal to the average over the previous three years of a fixed percentage of positive gross income.¹⁹ Years in which gross income is negative are ignored. The proposed percentage is 15%. However, the use of gross income as

¹⁹ Gross income is defined (for conventional banks) as net interest income plus net non-interest income (comprising (i) fees and commissions receivable less fees and commissions payable, (ii) the net result on financial operations and (iii) other gross income. This excludes extraordinary or irregular items) (Basel, 2001)

Gross income is defined (for Islamic banks) as the sum of : (a) net income from financing activities (b) net income from investment activities and (c) other income (gross of: (i). any provisions (e.g. for unpaid income, for profit equalization reserve) (ii). any operating expenses, including fees paid to outsourcing service provider and depreciation of ijarah assets. But does not include (i) any realized or unrealized profit/losses from sales or impairment of securities in banking book (ii) any income or expense from extraordinary or irregular items and (iii) any income derived from takaful recoveries) LESS : Income attributable to the investment account holders and depositors (BNM, 2008)

the basic indicator for operational risk measurement could be misleading in Islamic banks, insofar as large volume of transactions in commodities, and the use of structured finance raise operational exposures that will not be captured by gross income (Sundararajan, 2005).

In contrast, the STA that allows for different business lines would be better suited, but would still need adaptation to the needs of Islamic banks. In particular, agency services under *murabahah*, the associated risks due to potential misconduct and negligence, and operational risks in commodity inventory management, all need to be explicitly considered for operational risk measurement (Sundararajan, 2004 & 2005).

Sundmacher (2007) finds that using gross income as a proxy or risk indicator in BIA does not reflect the actual operational risk exposures. In contrast to BIA, using the STA with the same proxy for measuring operational risk capital charge has indicated the different result. The STA's result shows the build-up operational risk exposures in the National Australia Bank during the period 2001-2004 of fraudulent activities by cohort traders, which resulted \$360 million losses of foreign exchange trading.

With regards to BIA, Sundmacher (2007) also employs the total revenue²⁰, total revenue - Australia²¹ and trading income as the alternative proxies for gross income and distinguish their capability to predict the build-up in operational risk exposures. The result shows that using the bank's gross income as the proxy indicated the lowest operational risk exposures when the losses were detected in 2004. The decreasing bank's operational risk exposures over the time provide a false 'sense of security'. In contrast to gross income, the alternative proxies indicated the different

²⁰ Refers to consolidated entity.

²¹ Refers to the proportion of total revenue generated in Australia

way, increasing operational risk exposures over the time. Particularly interesting is continuous increasing in the total revenue-Australia.

Operational risk is considered high on the list of exposures of Islamic banks. In a recent study, survey and interview was conducted by Nor Hayati et. al (2009) show the supportive finding which operational risk has been ranked as the second highest risk after credit risk in the operation of Islamic banks. This may due to the classification of shariah compliant risk as one of independent major risks faced by Islamic banks while the IFSB included the shariah compliant risk as part of operational risk. A survey conducted by Khan and Ahmed (2001) shows that the managers of Islamic banks perceived operational risk as the most critical risk after mark-up risk. The survey finds that operational risk is lower in fixed income assets of *murabahah* and *ijarah* and the highest one in *diminishing musharakah*. The relatively higher ranking of the instruments indicate that banks find these contract complex and difficult to implement.

With regard to different business lines as in STA, Islamic banks may choose contract-based instruments in addition to the business lines because each contract or financing mode inherent certain risk at the different level of scale. Hence, Islamic bank also need complementary guidance in managing risks, particularly relating to the specificities of financing mode or contract-based instruments. Each contract should be assigned different β factors, e.g the more complicated structure and difficult to implement, the higher operational risk it perceives, hence higher β factors were assigned.

An estimate of the potential operational losses that the banking institution faces, i.e. operational risk exposure, at the soundness standard is consistent with a 99.9 per cent confidence level over a one-year period. The institution will multiply

the exposure by 12.5 (which is the reciprocal of the minimum CAR of 8%) obtain risk-weighted assets for operational risk; this is added to the risk-weighted assets for credit and market risk to arrive at the denominator of the regulatory capital ratio. Table 3 below illustrates the calculation of operational risk for an Islamic bank following the new IFSB's proposal for CAS (2005). The operational risk capital charge is obtained by multiplying the average gross income for three years by 15% weight. If the annual gross income in any of given years is negative or zero, this figure is excluded from both the numerator and denominator when calculating the three years average such as year 2004 and 2005. Newly established Islamic banks that do not have a complete three years data shall only take into account the actual gross income earned to date for purposes of deriving the average gross income, while leaving the gross income for any remaining years as zero (BNM, 2008). The RWA for operational risks is then obtained by multiplying the capital requirements for operational risk by 12.5 to convert into risk-weighted equivalent assets. The amount RM233 125, RM221 813, RM336 263 and RM456 263 for year 2003, 2004, 2005 and 2006 together with the sum of RWA for credit and market risks will produce the total risk-weighted assets (TRWA) for that year.

Table 3: Sample calculation for Islamic bank's operational risk based on BIA

Item of Islamic Bank's Income Statements	2003	2004	2005	2006	2007	2008
	(RM '000)	(RM '000)	(RM '000)	(RM '000)	(RM '000)	(RM '000)
Income derived from investment of depositors' funds	571 711	611 655	753 777	810 545	841 659	919 496
Income derived from investment of shareholder's funds	88 596	75 593	131 222	150 088	168 834	232 545
Allowance for losses on financing	(63 880)	(103 376)	(648 030)	(1325 478)	4 816	7 547
Profit equalization reserve	(7 433)	(25 832)	(7 148)	(9 308)	(47 921)	8 317
Operating expenses	(200 011)	(222 636)	(377 499)	(375 523)	(380 519)	(439 384)
Total distributable income	388 983	335 404	-147 678	-749 676	586 869	728 521
Income attributable to depositors	(258 617)	(237 106)	(28 217)	(371 011)	(407 527)	(421 186)
Total net income (gross income)	130 366	118 298	-175 895	-1120 687	179 342	307 337
Average Gross Income for 3 Years	124 332	118 298	179 342	243 340		
Operational Risks Capital Charge (Weight = 15%)	18 650	17 745	26 901	36 501		
RWA for Operational Risks (12.5)	233 125	221 813	336 263	456 263		

CONCLUSION

The discussion on operational risk in Islamic banks is still in its infancy. This paper suggests that several issues around the risk still need to be clarified and addressed further. The fact that there exist a variety and unique nature of financing and investment activities of Islamic banks, each one having its own risk characteristics affecting both sides of the bank's balance sheet. While basic Basel core principles of effective banking supervision apply equally well and ideally suit the Islamic banking institutions, risk measurement and risk management practices still need specific adaptations to Islamic banks' operational characteristics. These particularities highlight the unique characteristics of Islamic banks and raise serious concerns regarding the applicability of the Basel II methodology to Islamic banks. This will set the stage for adopting more advanced capital measurement approaches as envisaged in Basel II, but tailored to the specific operational characteristics of Islamic banks.

The limitation of this study was focusing only on calculation operational risk capital charge based on BIA only for one Islamic bank. For further research, it is so meaningful to include all the Islamic banks in order to examine the behavior of operational risk. The researchers could consider expanding the discussion on key issues in measuring operational risk in Islamic banks. Further research could also be proceeding by exclusively focusing on operational risk capital charge measurement using STA, which employed gross income as a proxy. They could also use alternative proxies for gross income and distinguish their capability to predict the build-up in operational risk exposures. By doing so, the best proxy to reflect bank's actual risk profile will be determined.

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