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Research Article

Developing a Structural Model to Define Influential Risk Elements in Islamic Banking: An Empirical Study in Iran

[1]Akbar Alem Tabriz, [2]Fariba Riahi and [2]Zahra Banasadegh
[1]Faculty of Management and Accounting, Shahid Beheshti University,
[2]Department of Management, Institute for Management and Planning Studies, Tehran, Iran

Abstract: The aim of this study is to identify the most influential risk elements and determine causal relationships network of risk factors in Islamic banking in Iran. Due to some unique principles used by Islamic banks, they encounter difficulties to manage various risks effectively than conventional banks. Consequently, a structural model was developed from a comprehensive set of risk elements with five reflective and one formative output construct namely; credit, liquidity, market, operational, unique risks and total risk by using PLs path modeling which statistically supports all constructs. Fitness Indices imply homogeneity among risk elements and statistics indicate not severe multicollinearity and redundancy in the model. This study provides key insight into causal relationships of influential risk elements in Islamic banking essential for proper resource allocation to compete with conventional banks.

Keywords: Credit risks, Islamic banking, liquidity risks, market risks, operational risks, risk management

INTRODUCTION

During the recent decades, a major surge of interest has been emerged to improve abilities to encounter with risks arising from internal or external business environment. Risk is defined as the situation which includes the probability of diverging from the paths leading to the expected or common result (Vaughan and Vaughan, 1999). In simple terms, it is a probability that the events shall happen opposite of expectations which such divergence can be positive or negative. In financial context, it means the probability that an actual return on an investment will be lower than the expected return. As a result, risk management has been highlighted as a main area of business practice not only entails measurement and mitigation of risks, but also for the purposes of regulatory reasons (Franklin and Santomero, 1997). Cumming and Hirtle (2001) refer to risk management as the overall process that a financial institution follows to define a business strategy and identify, quantify, understand and control the nature of risks it faces. Consequently, risk management should be an integral part of the corporate strategy which its elements would include identifying, measuring, monitoring and managing various risk exposures (Jorion, 2001). Hence, the purpose of studying risk is not elimination because of practical impossibility; it seeks to acquire proper insight to control over and to manage it to mitigate harmful effects in decisions which should be taken (Elgari, 2003).

Owing to the fact that a bank is a trustee of public funds, utilization of these funds in ways that protect the rights of their owners, is its major responsibility. Therefore, comparative studies on risk underlying Islamic modes of finance are extremely important. Since Islamic banks are faced with this mode of finance which carries much higher risks than interest-based loans. They must find out a sound understanding of various dimensions of Islamic banking in comparison to conventional banking (Elgari, 2003). The Islamic banking as another financial intermediary with Profit and Loss Sharing (PLS) contracts as its cornerstone, theoretically, expected to bring more stabilization and efficiency of resource allocation. In addition, an Islamic bank similar to what a conventional bank has been commonly practicing contracts which may slightly look debt financing (Izhar, 2010). Nevertheless, the nature of debt in an Islamic bank qualitatively differs from that of conventional bank. In fact, a debt contract in an Islamic bank necessitates tying to some underlying assets. It comes as no surprises due to Islamic banks operate in a similar, if not the same, business environment (Ahmed, 2005).

Looking at influential risk elements in the literature, it seems that there is a lack of holistic view about the extent to which each typical risk impacts on total risk originating from different spheres (credit, liquidity, market, etc). In fact, no comprehensive approach exists on characterising a collective set of risks to manage risk effectively in Islamic banking,

Corresponding Author: Fariba Riahi, Department of Management, Institute for Management and Planning Studies, Tehran, Iran

particularly in Iran. As a result, a more deliberate study to effectively define various risks and their relationships is essential.

This research focus on identification of the influential risk elements in Islamic banking in Iran and their importance to smooth ways to decide on and tackle main challenges in risk management. In other words, the main objective of the research is therefore to answer the following questions in risk management in Islamic banking:

- Which elements are influential in Islamic risk management?
- Which structure can explain the interactions of risk factors playing a leading part in total risk perceived by Islamic banks?

This study starts with a discussion on the fundamental features of Islamic banks and explanation of different kinds of Islamic contracts. Afterwards, common risk elements among Islamic and conventional banks, as well as special risk dimensions of Islamic banking are explored. It then proceeds with the subsequently explained research strategy and a developed structural model which could be used to determine the causal relations of the risk elements followed by an empirical study in Iranian banks using Islamic banking. The concluding part presents the acquired results and finally some recommendations are put forward.

FUNDAMENTAL FEATURES OF ISLAMIC BANKING

Understanding the notion of Islamic banking necessitates realizing that Islamic banks and their operations as an integral part of an Islamic economic system, based on the codification of injunctions outlined in the Quran and the traditions of the Prophet Muhammad, called the Islamic *Shariah*. Key elements of the Islamic economic system cover individual rights, property rights, contracts, work and wealth and the role of the state. Consequently, this section reviews the underlying features of Islamic banking presented in the literature to define a paradigmatic version of Islamic banking and their operating characteristics (Errico and Farahbaksh, 1999). In other words, a debt contract in Islamic financing scheme is not interest (*Riba*)-based contract, in contrast to the concept of a debt contract in conventional perspective. Therefore, the distinctive contractual structure that an Islamic bank embodies requires different treatment of risk management. On the other hand, an Islamic bank is an institution offering financial services which compatible with a set of *shariah* principles ruling Islamic banking operations as follows:

- Prohibition of dealing with interest (*Riba*)
- Financial contracts must be devoid of contractual uncertainty (*Gharar*)
- Exclusion of gambling (*Maysir*) in any financial activity
- Profit must not be derived from *Haram* economic and financial activities (prohibited industries such as those related to pork products, pornography, or alcoholic beverages)
- Each financial transaction must refer to a tangible, identifiable underlying asset
- Parties to a financial transaction must share in the related risks and profits.

The mentioned principles must be conceptually inherent in Islamic banks to differentiate between them and conventional banks (Izhar, 2010).

With respect to *Shariah* requirements in financing contracts, in spite of diverse interpretations prevalent in the industry, Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) has already issued its latest *Shariah* standard to be used by Islamic banks. In sum, *Shariah* compliant financing in six different contracts, require to fulfill the following *shariah* requirements (AAOIFI, 2005):

***Murabahah* and *Ijarah* contracts:**

- The asset is existent at the time of sale or lease or, in *Ijarah*, the lease contract should be preceded by acquisition of the leased asset
- The asset is legally owned by Islamic banks when sold
- The asset is intended employing by the buyer/lessee for activities or business allowed by *Shariah*; if the asset is leased back to its owner in the first lease period, it should not lead to contract of *Inah*, by varying the rent or the duration
- In the event of late payment, there is no fine or increase in price of exchange to extend or reschedule the date of payment of accounts or lease receivable, irrespective of whether the debtor is solvent or insolvent.

***Salam* and *Istisna* contracts:**

- A sale and purchase contract cannot be interdependent and mutually conditional on each other. This is for the case of *Salam* and parallel *Salam* or *Istisna* and parallel *Istisna*
- It is not permitted to stipulate a penalty clause in case of delay in delivery of purchased commodity under *Salam* contract. However, it is allowed under *Istisna* or parallel *Istisna*
- The subject matter of an *istisna* contract may not physically exist on entering into the contract

***Musharakah* and *Mudarabah* contracts:**

- Capital of the Islamic banks is to be invested in *Shariah* compliant investments or business activities.
- A partner in *Musharakah* cannot guarantee the capital of another partner, but a mudarib guarantees the capital of the *Mudarabah*.

- Purchase price of other partners' share with a binding promise to purchase can only be set as per the market value or as per the agreement at the date of buying in a *musharakah*. It is not allowable to stipulate that the share be acquired at its face value.

With regard to *Shariah*, Islamic banks encounter the same challenges as conventional banks to the extent that they offer financial services in various banking activities (Archer and Haron, 2007; and Hossain, 2005). However, the challenges are more sophisticated in Islamic banks because of substantially different financial activities and contractual features (Islamic Financial Services Board (IFSB), 2007a). In this regard, several points are worth mentioning as follows (Errico and Farahbaksh, 1999):

First, neither the capital value nor the return on investment of deposits is guaranteed by Islamic banks and these banks mainly pool depositors' funds to provide them with professional investment management. This situation underlines a great deal of similarity between the operation of Islamic banks and investment companies. However, a fundamental difference between these two needs should be realized. It lies in the fact that investment companies sell their capital to the public, while Islamic banks accept deposits from the public. In fact, shareholders in an investment company possess a proportionate part of the company's equity capital and have a number of rights, consisting of receiving a regular information flow on developments of the company's business and exerting voting rights corresponding to their shares on important matters, like changes in investment policy. Hence, they are in a position to inform of investment decisions, monitor the company's performance and influence strategic decisions. In sharp contrast to investment companies, depositors in an Islamic bank are entitled to share the banks' net profit or loss on the ratio stipulated in their contracts. Investment deposits cannot be withdrawn at any time, but only on maturity and, in the best case, at par value. Moreover, depositors have no voting rights because they do not own any portion of the banks' equity capital. Consequently, they cannot influence the banks' investment policy (as noted, their relationship with the bank is regulated according to an *unrestricted Mudaraba* contract).

Second, because of the structure of balance sheets and the use of profit and loss sharing arrangements in Islamic banks, they operate according to a paradigm version of Islamic banking appearing to be better poised than conventional banks to assimilate external shocks. Indeed, Islamic banks have the ability to reduce the capital value of investment deposits in the case of a loss.

Third, Islamic banks are not expected to reduce credit risk by systematically requiring collateral or other guarantees as a prerequisite to grant profit and loss sharing facilities.

Fourth, a major difference between the two permissible operational systems needs to be recognized. Indeed, Islamic banks can use all of their deposits (demand and investment) for their finance and investment activities, while only investment deposits can be utilized for such purposes in conventional banks. This makes Islamic banking where banks' assets and liabilities are fully integrated far riskier than conventional banking and banks' liabilities are divided into two windows.

Risk elements and special risk dimensions in Islamic banking: The concept of risk hardly needs to define. Risk (*Mukhatarah*) is defined as "the situation involving the probability of deviation from the path that leads to the expected or usual result" (Basel Committee, 1999a).

Risk is stated in simple terms "the likelihood of loss". In fact, it is a situation with an uncertainty about the occurrence of desired results and the probability of the undesirable consequences. This is exactly what is meant by risk as used in financial literature. There are various ways to measure and classify risk and banks and insurance companies have also developed special methods to measure risk (Jackson and Perraudin, 1999). Guiding principles of risk management for institutions (other than insurance institutions) published by the (Islamic Financial Services Board (IFSB), 2007a) classifies risks into five categories which four of them are common between Islamic and conventional banks, namely; credit risk, market risk, liquidity risk and operational risk and one category includes unique risks exclusive to Islamic banking system shariah-compliance risk including; comprising rate of return risk, displaced commercial risk and equity investment risk.

Credit risks: Credit risk is defined as the potential that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms (Basel Committee, 1999a). Jackson and Perraudin (1999) regard it as the largest risk element of most banks and in case of improper credit management so that it can decline individual banks or even cause many financial instability which overshadow the whole banking system. Thus, credit risk is definitely an inherent and crucial part in banking sectors.

A better understanding on the nature of credit risk necessitates introducing the types of credit risks involved in financial activities before any discussion. In this regard, different authors have expressed various criteria to classify credit risk. For example, Hennie (2003) focuses attention on three main types of credit risk as consumer risk, corporate risk and sovereign or country risk, while Culp and Neves (1998) classify credit risks as default risk and resale risk. According to Horcher (2005) there are six types of credit risk, including default risk, counterparty pre-settlement risk, who groups credit risks into counterparty settlement

risk, legal risk, country or sovereign risk and concentration risk. However, legal risk is more likely to be considered as independent or belonging to operational risk nowadays (Casu *et al*., 2006). Concentration risk, together with unfavorable selection as well as moral hazard, is more reasonably to be thought of as an important issue in managing credit risk rather than a type of risk itself (Duffie and Singleton, 2003). In the following illustration, only the rest four kinds of credit risk mentioned by Horcher (2005) have been touched upon.

Default risk: According to Horcher (2005), traditional credit risk relates to the default on a payment, especially lending or sales and a likelihood of the default is called the probability of default. When a default occurs, the amount of risk may be as much as the whole liability, which can be regained later, depending on factors like the creditors' legal status. However, later collections are generally difficult or even impossible in that huge outstanding obligations or losses are usually the causes why organizations fail.

Counterparty pre-settlement risk: Pre-settlement risk arises from the possibility that the counterparty will default once a contract has been make a contract but a settlement still does not take place. During this period, a contract has unrealized gains indicating the risk. The potential loss to the organization depends on how market rates have changed since the establishment of the original contract can be assessed in terms of current and potential exposure to the organization (Horcher, 2005).

Counterparty settlement risk: Settlement risk which is typically faced in the interbank market refers to the situation where one party of a contract fails to pay money or deliver assets to another party at the settlement time. It can be associated with any timing differences in settlement (Casu *et al*., 2006). Horcher (2005) points out that the risk is often related to foreign exchange trading, where payments in different money centers are not made simultaneously and volumes are huge.

Country or sovereign risk: Country risk stems from the impact of foreign economic deterioration, social and political conditions on overseas transactions and sovereign risk refers to the possibility that governments may compel their authority to declare debt to external lenders void or modify flows of profits, interest and capital under some economic or political pressure (Casu *et al*., 2006). Owing to the fact that evidence shows that countries and governments impose temporary or permanently controls on capital, prevented cross-border payments and suspended debt repayments etc, problems come about for issuers to fulfill obligations in such environment; also, financial crisis may trigger sometimes (Horcher, 2005).

In comparison, conventional banks face credit risk in almost all operations, because the relationship between the banks and those who transact with turns to debtor with a creditor in all cases. Islamic banks also face this form of risk in most of the modes of financing that they use. It is well known that *Murabahah*, *Istisna* and installment sale, which is sales with delayed payment generating debts in the accounts of the banks (Elgari, 2003).

Liquidity risks: Liquidity is the life of a commercial bank and means cash availability. In other words, it indicates how quickly a bank can convert its assets into cash at face value to meet cash demands of its depositors and borrowers. In fact, higher amount of liquid assets of a bank shows greater liquidity of the bank (Samad, 2004). Liquidity risk is the risk that a deposit taker is unable to meet its financial commitments as they fall due or that it suffers material loss in doing so. It can increase because of high concentration of the deposit takers' loans in a particular area of economic activity and a loss of confidence in deposit taking adversely affects ability to raise new funding with a considerable decline in the credit quality of its counterparties. Greuning and Iqbal (2008) state that a bank has adequate liquidity potential if it can obtain needed funds (by increasing liabilities, securitizing, or selling assets) promptly and at a reasonable cost. They categorize the Liquidity risks in Islamic banks as lack of liquidity in the market and lack of access to funding, as follows:

Lack of liquidity in market: Market is the major cause of liquidity risk. Indeed, liquidity price is a function of market conditions and perception of market about inherent riskiness of the borrowing institution. Thus the amount of liquid or readily marketable assets which a bank should hold depends on the stability of its deposit structure and its potential for rapid expansion of the asset portfolio. Prohibition by *Shariah* law on interest-based borrowing, in case of need and the absence of an active inter-bank money market, has restricted Islamic banks options to manage their liquidity positions efficiently. Shallow secondary markets are another source of liquidity risk. Financial instruments that can be traded in the secondary market are restrained Islamic banks from trading with instruments such as conventional bonds and T-bill, commonly used in the conventional banks and *Shariah* imposes certain limitations on the trading of financial claims, unless such claims are linked to real assets. Therefore, there is a need to develop assets backed tradable securities, known as *sukuk*. Even where instruments are available, the number of market participants is limited (Greuning and Iqbal, 2008).

Lack of access to funding: Typical means of liquidity management accessible to conventional banks, like the inter-bank market, secondary market for debt instruments and discount windows from the lender of last resort (central bank) are all considered as based on *Riba* (interest) and, therefore, are not acceptable. Conventional banks have access to borrowings with extended short-term maturity through well-developed and efficient inter-bank markets. This access is essential to meet institutions' needs for short-term cash flow (Islamic Financial Services Board (IFSB), 2007a). On the other hand, certain features of some Islamic instruments give rise to liquidity risks of Islamic banks. For instance, liquidity becomes a problem given the cancellation risks in *Murabahah* or the inability to trade *Murabahah* or *Bay' al salaam* contracts, which can be traded only at par. Islamic banks hold a considerable proportion of funds as demand deposits in current accounts and these can be withdrawn at any time. Banks guarantee repayment of the principal deposited, but account holders do not have rights to a share in the profits. Furthermore, some Islamic banks invest only a small fraction of the current account of holders' funds and in the absence of liquid short-term instruments, maintain a high level of idle cash (Greuning and Iqbal, 2008).

Operational risks: Operational risk is stated as the risk of loss resulting from inadequate or failed internal processes, people or systems, or external events (Hossain, 2005). In Islamic banks, operational risk is associated with the loss resulting from "inadequate or failed internal processes, people and systems, or from external events, including losses resulting from *Shariah* non-compliance and the failure in fiduciary responsibilities (Islamic Financial Services Board (IFSB), 2007a). Nevertheless, the challenges are more sophisticated for Islamic banks since the financial activities and features of contracts are substantially different. Further, it is argued that operational risks are likely to be more significant for Islamic banks due to their specific contractual features (Fiennes, 2007; Greuning and Iqbal, 2008; Iqbal and Mirakhor, 2007; Sundararajan, 2005). To a greater extent, operational risk management in Islamic banking requires more thorough understanding of the sources of operational risks discussing in the next section.

Fiduciary risk: According to (Islamic Financial Services Board (IFSB), 2007a), Islamic banks are liable for losses resulting negligence, misconduct or breach of their investment mandate. The risk of losses in such cases is characterized as a fiduciary risk. In other word, fiduciary risk is an indication of failure to "perform in accordance with explicit and implicit standards applicable to their fiduciary responsibilities". Such failure can be resulted from the high degree of their volatile earnings (Muljawan, 2005). As Iqbal and Mirakhor (2007) argue, the consequences of fiduciary risk can be enormous, particularly if Islamic banks start to lose their reputation. They argue that fiduciary risk can give a huge impact on banking costs and access to liquidity. In respect of fiduciary role, Islamic banks are exposed to fiduciary risk if they fail to align the objectives of the investors and shareholders with the actions supposed to carry out. Hence, a sound level of solvability is necessary to enhance their credibility to ensure fund providers.

People risk: People risk is another operational risk coming about incompetence or fraud exposing banks to potential losses intentionally or unintentionally. It includes human errors, lack of expertise and fraud (Akkizidis and Kumar, 2008). Increasing development of Islamic banking industry has not been matched up with the number of people who have credentials in running and directing banking systems (Khan, 2004; Nienhaus, 2005). Furthermore, the dimension of people risk in Islamic banks is understandably wider than in conventional ones since Islamic banks' personnel are required to be well-informed about both, conventional banking products and their status in relation to Islamic requirements (Aziz, 2006; Ebrahim, 2007). In other words, unqualified or incapable staff endangers Islamic banks to more operational risk. More importantly, despite such challenges; personnel of Islamic banks should be able to create financial contracts which are more than just legally interest free. In other words, unskilled staff can cause the product to be, either illegitimate according to *Shariah* or inefficient (Jackson-Moore, 2007).

Technology risk: Advanced application of Information Technology (IT) has brought a new aspect of the current competition of banking industry. Inability to keep up with the advanced use of an information technology could cause a bank to fall behind its competitors. Therefore, every Islamic bank must be committed to a continual process of upgrading, enhancing and testing its technology to effectively meet sophisticated client requirements, market and regulatory changes and evolving internal needs for information and knowledge management. In fact, failure to respond mentioned prerequisites could increase exposure to operational risk related to IT (Chorafas, 2004: 91). On the other hand, the use of software and telecommunications, in most cases, are not tailored to the need of Islamic banks which could also contribute to technology risk, as well as many other internal factors like human errors, internal fraud through software manipulation and so forth (Akkizidis and Kumar, 2008). In addition, spending a great deal of capital on technology without the corresponding Return on Investment (ROI) indicates IT-related operational risk (Chorafas, 2004).

Legal risk: Legal risk has an unpredictable effect, even though it can be the determinant of losses that banks have to incur (Scott, 2001). Legal risk may stem from uncertainty in laws, lack of reliable legal system enforcing financial contracts, legal uncertainty in the interpretations of contracts, legitimacy of financial instruments, lack of available legal experts and exposure to unanticipated changes in laws and regulations (Cihak and Hesse, 2008; Djojosugito, 2008). In comparison, some operational aspects of Islamic banking activities are not sufficiently covered by laws which cause more exposure to legal risk. Also, a number of inevitable separate contracts in Islamic banking services could intensify additional legal risks (Djojosugito, 2008). As a case in point, in *Murabaha* transactions, the bank has to buy an item and then sell it on under different payment terms. Uncertainty in regulation may also account for legal risk if such regulatory changes influence the lawfulness of certain Islamic financial instruments. That is, the law views some *Mudarabah* bonds issued as debt guaranteed by the patrimony of *Mudarib*. While *Shariah* prohibits this action, the law will not uphold the *Shariah* prohibition (Djojosugito, 2008).

Market risks: Market risks can be systematically arisen from macro sources, or unsystematic, caused by specific assets or instruments (Greuning and Iqbal, 2008). It relates to the current and future volatility of market values of specific assets (e.g., the commodity price of a *Salam* asset, the market value of a *Sukuk*, the market value of *Murabahah* assets purchased to be delivered over a specific period) and foreign exchange rates. In addition, market risk for a financial institution arises in the form of unfavorable price movements, such as yields, benchmark rates, foreign exchange rates (FX risk) and equity and commodity prices (price risk), which have a potential impact on the financial value of an asset over the life of the contract (Helmy, 2012). On the other hand, Market risks in Islamic banking are almost same as conventional banking, except there is no interest rate risk. Moreover, Islamic banks, due to their nature of business, are also exposed to significant market risks along with credit risks; for instance, trade-based contracts (*Murabaha*, *Salam* and *Istisna*) and leasing as a result of differences between actual and expected rate of return for investment account holders which can be classified in the next section (Hassan and Lewis, 2007).

Markup risk: Islamic banks are exposed to markup risk, due to the fixed markup rate used in *Murabahah* and other trading financing instruments for the duration of the contract, while the benchmark rate may change (Greuning and Iqbal, 2008). This means that the prevailing markup rate may rise beyond the rate the bank has locked into a contract, making the bank unable to benefit from higher rate. Consequently, if the benchmark rate changes, the market rates on these fixed income contracts cannot be adjusted (Hassan and Lewis, 2007). On the other hand, clients will not benefit from any decrease in market rate and also will pay as the same in their last month as in the first one (Fleifel, 2009). Markup risk can also appear in profit-sharing modes of financing like *Mudaraba* and *Musharaka* as the profit-sharing ratio depends on (Hassan and Lewis, 2007).

Commodity/price risk: Islamic banks tie their financing contracts to real assets and it is typically another unique attribute of their operation. As a result, this may lead to other risks such as pricing risk, depreci ation and amortization, or may be asset loss. Commodity risk is mainly caused by the *Salam* contracts because of the possible price fluctuations in the future. It also happens when Islamic banks bear the risk of price variations after delivery (Kahf, 2000). For special product, Islamic banks are exposed to price risk in case of *Bay'al-salam* (forward sale), during the period of delivering the commodities and its sale at the prevailing market price. This risk is similar to the market risk in a forward contract in conventional banks if it is not hedged properly (Greuning and Iqbal, 2008).

Leased asset value risk: Through a lease agreement, the same assets are leased back to the originator, being the lessee, on which periodic rent is paid by the lessee to the *Sukuk* holders through the Special Purpose Vehicle (SPV). There is generally a repurchase pledging by the originator on the base of which the originator is obliged to buy the assets backed from the SPV on maturity of *Sukuk* or upon an event of insolvency, at the market/fair price or at a price on which both parties agree at the time of purchase (Iqbal and Mirakhor, 2007). The repurchase agreement is independent of the main *Sukuk* agreement and the process enables *Sukuk* redemption and reimbursement of the amount to the sukuk holders which dissolves trust. Thus, the residual asset value risk is handled by the originator who undertakes to buy the asset on market price. A main restriction on *Ijarah* is that the return (rent) should be commensurate with the value of the underlying sukuk (assets) (Zaheer and Wijnbergen, 2013).

Currency risk: Currency risk arises from a mismatch between the value of asset and that capital and liabilities denominated in foreign currency (or vice versa) or from a mismatch between foreign receivables and foreign payables expressed in terms of domestic currency (Greuning and Iqbal, 2008).

Currency risk can be found in more than one face, particularly in Islamic banking and especially in the absence of hedging tools like derivatives, currency

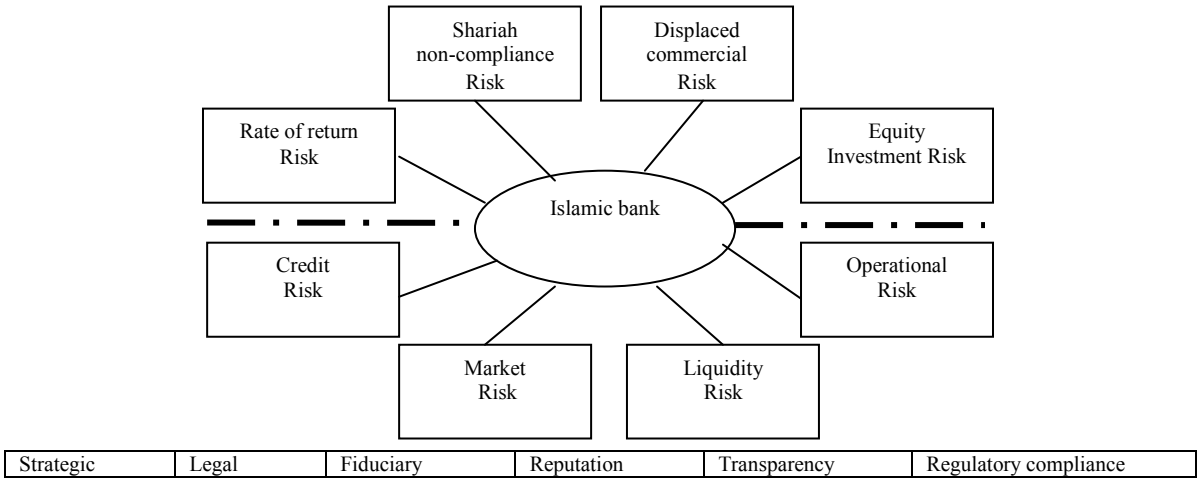

Fig. 1: Risk portfolio in Islamic banking (Helmy, 2012)

swaps and forward contracts. Foreign exchange rate movement is another transaction risk arising from the deferred trading nature of some contracts offered by Islamic banks, as the value of the currency in which receivables are due may depreciate or the currency in which payables are due may appreciate (Hassan and Lewis, 2007). In the absence of any tradable derivatives to hedge currency risk, Islamic financial institutions are further exposed to this risk. This is another reason why financial institutions shy away from either exposing themselves or help their clients to hedge currency risks (Helmy, 2012).

Securities price risk: With a growing market for Islamic bonds (*Suku*k), Islamic banks are allowed to invest in the stock market if the company is selling *Shariah*-compliant products and has less than 5% or less than 33% of prohibited business debt.

Like conventional banks, Islamic banks are exposed to the same level of risks in the stock market. Moreover, Islamic banks are not allowed to use options, future, forwards, short, or long selling (Fleifel, 2009). However, the prices of such securities are exposed to current yields in the market. Similar to a fixed-income security, the prices go down as yields go up and the reverse. Islamic banks holding such securities are exposed to volatility in yields, unless they hold the security until maturity. Furthermore, the secondary markets for such securities may not be very liquid which expose Islamic banks to distorted prices (Greuning and Iqbal, 2008).

Unique risks in Islamic banking system: Since the Islamic financial system is mainly based on profit and loss sharing principle, it causes a portion of risks besides the generic risks faced by conventional banks (Helmy, 2012). However, products and services of Islamic banks are conceptually different from those of the conventional counterparts. The different concepts in providing products and services lead to an additional risk attached to the operation of Islamic banks and also to capital adequacy measurement (Rulindo, 2009). Besides generic risks, common among Islamic and conventional banks such as credit, market, operational and liquidity risks, Islamic banks carry different types of risks due to the compatibility with *Shariah* as rate of return, displaced commercial risk, *Shariah* compliance risk and equity investment risk. Figure 1 illustrates risk profile in Islamic banking and relationship between generic and unique risk elements of Islamic banks which cover strategic, legal, fiduciary, transparency and regulatory compliance in Islamic banks. In fact, Islamic banks carry different types of risks due to the compatibility with Shariah (Helmy, 2012).

Shariah compliance risk: IFSB defines *Shariah* non-compliance as a risk arising from failure to comply with the *Shariah* rules (Islamic Financial Services Board (IFSB), 2007a). Such compliance requirements must be pervasively conditioned throughout the organization and also in their products and activities. *Shariah* compliance is considered by IFSB as a higher priority in relation to the other identified risks, since violation of *Shariah* principles will result in cancellation of transactions or illegitimate income.

The need to assure compliance with *Shariah* in operational risk management is vital (Aziz, 2006) and it must include the products, activities and contract documentation. In fact, the main objective of *shariah* compliance is to ensure that:

- The nature of Islamic banks' financing and equity investment
- Their operations are executed in concordance with the *Shariah* principles. In sum, *Shariah* compliant financing, in mentioned contracts, should be conducted (AAOIFI, 2005).

Rate of return risk: Islamic banks are forbidden to provide fixed rate of return in comparison to conventional banks. In other words, conventional banking operations are interest-based, fixed income securities on the assets side, with less uncertainty in the rate of return earned on investments, held until maturity. Furthermore, Islamic banks have to await the results of their investments to specify the level of return that investors-depositors will earn. In contrast, mixed markup-based and equity-based investments in Islamic banks intensify uncertainty (Greuning and Iqbal, 2008). Whereas the return on deposits in conventional banks is predetermined, the return on deposits in Islamic banks is anticipated and not agreed beforehand. As a result of involving in profit and loss sharing investments by Investment Account Holders (IAHs) in Islamic banking, IAHs will be receiving return based on the profitability of their investments, rather than a fixed amount. Accordingly, they might decide to withdraw the deposits if rate of return is lower, compared to the conventional banks. This will cause Islamic banking unstable and it will affect country's economy as a whole (Htay and Salman, 2013).

Displaced commercial risk: According to the current standards, Displaced Commercial Risk (DCR) is defined as a risk and a pressure faced by an Islamic bank to pay its investors-depositors a rate of return higher than what should be payable under the actual terms of the investment contract. DCR derives from competitive pressures on Islamic banks to attract and retain investors (fund providers) (Htay and Salman, 2013).

Displaced commercial risk often occurs when IAHs funds are invested in assets such as *Murabahah* or *Ijarah* with long term maturity periods and the rate of return which may not be competitive with alternative investments (Kozarević *et al*., 2013). Though Islamic banks are not supposed to do such income smoothing, but due to commercial pressure, they are virtually forced to do for IAHs. To manage displaced commercial risk the Islamic banks create reserves such as Profit Equalization Reserve (PER) before allocating the *Mudārib* share in order to maintain a certain level of return on investment for IAHs and investment risk reserve (IRR) (Haron and Hock 2007).

Equity investment risk: IFSB defined the equity investment risk as the risk rising from entering into a partnership with the aim of undertaking or participating in a particular financing or general business activity as described in the contract, in which a finance provider shares in the business risk (Rulindo, 2009). Islamic financial institutions can also be exposed to increased

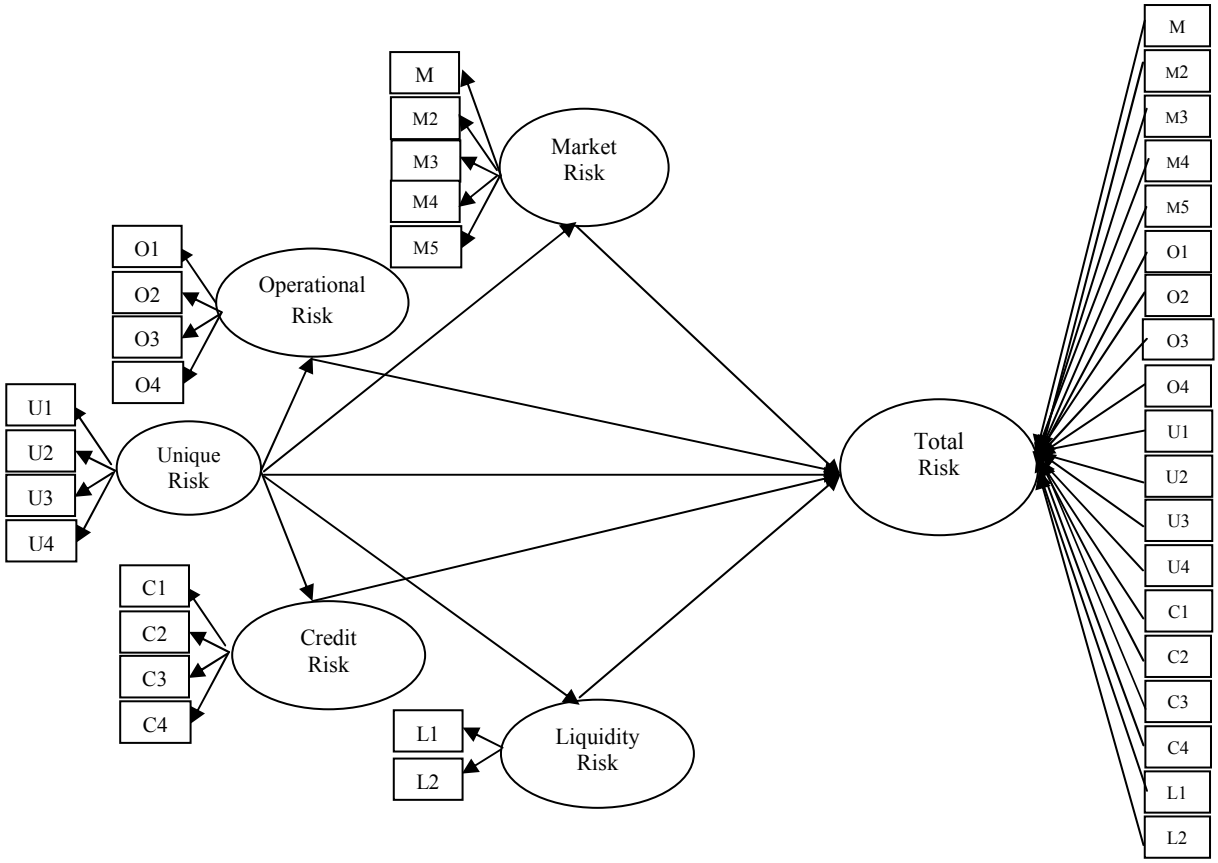

Fig. 2: Conceptual model of causal relationship network of risks

inventory risk due to the increased volatility and the reduction in asset prices. Islamic banks with a high proportion of their business in profit-sharing mode (*Mudaraba* and *Musharaka*) may be exposed to equity investment risk, possibly by inability of the enterprises in generating the expected returns. Also, the absence of an Islamic money market infrastructure would also expose the Islamic financial system to higher liquidity risks (Venardos, 2010). This kind of risk is mainly associated with *Mudarabah* or *Musharakah* contracts on account of equity holding with the purpose of investing or holding equity for trading or liquidity purpose (El Tiby, 2011).

MATERIALS AND METHODS

Conceptual research model: All businesses including financial institutions face risk and uncertainty. However, Islamic banking faces some additional kinds of risks given their nature of activities. Some risks are common to both Islamic and commercial banks like credit risk, market risk, operational risk and liquidity risk but some are unique to Islamic banks.

As illustrated in Fig. 1, as well as literature review findings, there are five distinct risk categories which four of them are common among Islamic and conventional banks and one category comprising rate of return risk, *Shariah* non-compliance risk, displaced commercial risk and equity investment risk are exclusive to the Islamic banks. Hence, to respond the research questions, a conceptual model has been proposed to define a causal relationship network of most widespread risk elements which have been selected as a comprehensive set of major risk factors in Islamic banking (Fig. 2). Each five categories of risks are then divided into the constituent elements and linked to total risks as their output and then, dependency between each factor and the related items is tested to validate the model. Figure 2 conceptual research model has been proposed that incorporates both formative and reflective constructs. In fact, the fundamental difference between reflective and formative constructs is that the Latent Variables (LVs) determine the Manifest Variables (MVs) as indicators in reflective constructs whereas the indicators (MVs) determine LVs for formative constructs (Chin, 1998b).

It is worth mentioning that when a formative construct is replaced with a reflective construct, it may cause either type I or type II errors. As a result, the model has a tendency to inflate or deflate (Jarvis *et al*., 2003). Jarvis *et al*. (2003) suggests a guideline for decision on a construct type comprising direction of causality, interchangeability of the indicators, co-variation among the indicators and nomological network of the indicators. First, the direction of causality should be from the indicators to the output construct since total risk is determined collectively by market, operational, unique, credit and liquidity risks rather than the reverse. Therefore, the underlying latent output construct does not cause for market, operational, unique, credit and liquidity risk in the same direction and with the same magnitude. Second, the measurement elements of specific risks are not interchangeable with measuring elements of other risks. For instance, items measuring market risk cannot be replaced with items measuring other risks and so forth. Third, a change in one indicator is not necessarily associated with changes in other indicators. For instance, an item measuring operational risk does not necessarily correlate with an item measuring market risk. Fourth, with respect to nomological network, it is not reasonable that different items of risks will be impacted by the same set of antecedent or lead to the same set of output construct. In other words, different antecedents may impact various risks to different extents and similarly, the effect of various risks on outcome construct can vary considerably.

Population and sample: The survey is based on a quantitative method and questionnaire is used as the tool of data collection. The questionnaire was developed on the base of literature review. Since reliability and validity are undoubtedly the hallmarks of good measurements of any research, first, the questionnaires were pre-tested in a pilot study to eliminate any ambiguity and difficulty in the required questions, prior to the main survey. Then, the questionnaires were sent to 360 banks randomly (Table 1) to capture respondents' perceptions by using a seven-point Likert scale to express opinions which enabled to indicate opinions on various risk elements. In total, 203 useable questionnaires were received (0.56% response rate). Regarding the response rate as a general rule, the more acceptable size would have a ten to one ratio to avoid over fitting the data which suffices for this study (Hair *et al*., 1998).

RESULTS AND DISCUSSION

Owing to the fact that the theoretical framework of the model is new and not yet fully crystallized and the model is relatively complex (i.e., large number of manifest and latent variables, formative constructs are included and the data used does not necessarily satisfy the assumptions of normality; large sample size and independency), PLS path modeling seems more suitable to do the research (Chin and Newsted, 1999). SmartPLS 2.0 software application is used to evaluate the research model with different criteria to evaluate reflective and formative constructs. To determine the most influential risk elements on their corresponding risk construct, the item loadings, Composite Reliability (CR) and Average Variance Extracted (AVE) for the reflective constructs are appraised to insure reliability and validity of the

Table 1: General characteristics of respondents

Category	Percentage	Category	Percentage	Category	Percentage	Category	Percentage
Gender	Male 68	Education	PhD 25	Organizational level	Expert 55	Sector	Public 62
			Post graduate 61		Manager 25		
	Female 32		Bachelor 14		Consultant 20		Private 38

Table 2: Measurement properties of reflective constructs

Construct	Indicator (label)	Item loading	T-Stat.	Composite reliability (CR)	Communality (AVE)
Market Risk	Markup Risk (M1)	0.678	11.128	0.888	0.616
	Commodity/price Risk (M2)	0.697	12.831		
	Leased asset value Risk (M3)	0.753	19.690		
	Currency Risk (M4)	0.912	92.866		
	Securities price Risk (M5)	0.857	52.216		
Operational Risk	Fiduciary Risk (O1)	0.833	45.908	0.936	0.785
	People Risk (O2)	0.895	84.748		
	Technology Risk (O3)	0.897	94.269		
	Legal Risk (O4)	0.917	130.502		
Liquidity Risk	Lack of liquidity in market (L1)	0.825	19.614	0.844	0.730
	Lack of access to funding (L2)	0.882	29.435		
Credit Risk	Default Risk (C1)	0.817	50.863	0.894	0.679
	Counterparty pre-settlement Risk (C2)	0.869	97.283		
	Counterparty settlement Risk (C3)	0.833	61.191		
	Country or sovereign Risk (C4)	0.776	47.787		
Unique Risk	Shariah compliance Risk (U1)	0.841	53.863	0.871	0.630
	Rate of return Risk (U2)	0.850	65.961		
	Displaced commercial Risk (U3)	0.694	22.105		
	Equity investment Risk (U4)	0.817	52.129		

reflective constructs. To measure the variance captured by a latent construct, AVE evaluates sum of variance extracted relative to the measurement items for each construct (Straub and Gefen, 2005). Definite thresholds do not yet exist for loadings to establish convergent and discriminant validity. In fact, convergent validity is shown when each measurement item loads with a significant t-value on its latent construct (t>1.96) and item loadings more than 0.4 at the alpha protection level ($\alpha = 0.05$) were selected as the most influential risk elements (Fornell and Larcker, 1981a). In other words, each of the measurement items (risk elements) loads with a significant t-value on its latent construct influential measuring item. Moreover, AVE is used to measure the variance captured by a latent construct, satisfies all requirements for the validity of the model (Chin, 1998a). Results in Table 2 show all item loadings are greater than 0.65 and all path coefficients are significant (t>1.96) which is testament to convergent validity at the indicator levels. Also, all CR values are greater than 0.70, indicting acceptable reliability.

To appraise the formative construct (total risks), the item weights and T-statistics are used to investigate multicollinearity between items. For each formative construct, instead of composite reliability and communality, item loadings weights, sign and magnitude are examined. All item weights are greater than the acceptable limit (0.10) with the exception of "Commodity/Price Risk (M2)" fairly smaller than 0.1 (Table 3). Results indicate not severe multicollinearity; that is, the model can indicate well the entire bundle of predictors predicting the outcome variable and the sign of the items weight are consistent with the underlying theory (Andreev *et al*., 2009).

The results of the structural model estimation are shown in Table 4 which T-values indicate all path coefficients, except unique risk to market risk, are significant at the 0.05 level. In other words, it is not supposed to be a significant relationship between unique risk and market risk in the proposed model.

Establishing discriminant validity requires an appropriate AVE analysis. All AVEs in the model are greater than 0.50 at the construct levels**.** If the square root (shown on the diagonal in Table 5) of every AVE is larger than any correlation between any pair of latent constructs in columns, it implies acceptable discriminant validity for the reflective constructs.

In order to determine the predictive power of the exogenous variables on the endogenous variables, R^2 is used with the objective of PLS to maximize variance explained in the endogenous variables. The literature suggests that R^2 value ranges of endogenous constructs equal to 0.67, 0.33 and 0.19 are substantial, moderate and weak, respectively (Chin,1998b). The R^2 values are 0.22, 0.022 for 0.057 corresponding to endogenous constructs credit, liquidity, market, operational and total risks which appear weak and 1.000 for total risk which indicates strong.

There is no global fitting function to assess goodness of fit in PLS; accordingly, each part of the model should be validated. Quality of the complete measurement model is assessed in terms of average communality (i.e., AVE) and the quality of the

Table 3: Measurement properties of formative construct

Construct	Indicator	Item weights	T-stat.
Total risk	Markup Risk (M1)	0.082	3.630
	Commodity/Price Risk (M2)	0.059	2.124
	Leased asset value Risk (M3)	0.107	4.936
	Currency Risk (M4)	0.150	7.171
	Securities price Risk (M5)	0.162	6.923
	Fiduciary Risk (O1)	0.093	12.274
	People Risk (O2)	0.105	24.064
	Technology Risk (O3)	0.142	20.137
	Legal Risk (O4)	0.115	24.890
	Lack of liquidity in market (L1)	0.108	7.778
	Lack of access to funding (L2)	0.128	9.731
	Default Risk (C1)	0.118	13.336
	Counterparty pre-settlement Risk (C2)	0.138	23.333
	Counterparty settlement Risk (C3)	0.117	23.249
	Country or sovereign Risk (C4)	0.098	17.179
	Shariah compliance Risk (U1)	0.115	14.111
	Rate of return Risk (U2)	0.115	16.900
	Displaced commercial Risk (U3)	0.087	11.615
	Equity investment Risk (U4)	0.101	15.887

Table 4: Structural model estimation

	Path results	
Path	Coefficient	T-Stat.
Unique Risk → Market Risk	-0.008	0.134
Unique Risk → operational Risk	0.238	6.655
Unique Risk → Credit Risk	0.465	11.995
Unique Risk → Liquidity Risk	0.148	3.269
Market Risk → Total Risk	0.453	7.883
Operational Risk → Total Risk	0.405	31.986
Unique Risk → Total Risk	0.334	21.808
Credit Risk → Total Risk	0.389	33.292
Liquidity Risk → Total Risk	0.203	27.161

Table 5: Construct correlation matrix

Construct	Market Risk	Operational Risk	Liquidity Risk	Credit Risk	Unique Risk	Total Risk
Market Risk	0.785	-	-	-		-
Operational Risk	-0.048	0.886	-	-	-	-
Liquidity Risk	-0.026	0.097	0.919	-	-	-
Credit Risk	-0.082	0.432	0.146	0.946	-	-
Unique Risk	-0.007	0.239	0.149	0.465	0.933	-
Total Risk	0.394	-0.048	0.336	0.712	0.638	-

Table 6: Fitting indexes

Construct	R^2	Communality	Redundancy
Market Risk	0	0.620	0
Operational Risk	0.057	0.785	0.04
Liquidity Risk	0.022	0.730	0.016
Credit Risk	0.22	0.679	0.142
Unique Risk	-	0.630	-
Total Risk	1.000	0.227	0.11
Average	0.26	0.45[a]	0.207

[a]: The average of communality is computed as a weighted average of all of the communalities using weights as the number of manifest variables in each construct with at least two manifest indicators

complete structural model in terms of average R^2. The average of communality is computed as a weighted average of all of the communalities using weights as the number of manifest variables in each construct with at least two manifest variables to estimate the prediction performance of the measurement model. Redundancy index is another one quality measure of the structural model, calculated for the j^{th} endogenous latent variables, which quantifies the variability portion of the manifest variables connected to. That is why PLS provides three different fit indices: communality, R^2 and redundancy index (Tenenhaus *et al*., 2005). Table 6 illustrates the fit indexes of the model and the average of communality is computed as a weighted average of all of the communalities using weights as the number of manifest variables in each construct with at least two manifest indicators.

Regarding the overall quality of the research model, Goodness of Fit (GoF) following Tenenhaus *et al*. (2005) as the square root of average communality multiplied by average R^2. The GoF is calculated as:

$$GoF = \sqrt{\overline{Communality} \times \overline{R^2}} \quad (1)$$

$$GoF = \sqrt{0.45 \times 0.26} = 0.34$$

Although PLS does not provide overall fit statistics, it considers the quality of the complete measurement model in terms of average communality (i.e., AVE) and the quality of the complete structural model in terms of average R^2 (Tenenhaus *et al*., 2005). Thus, the proposed structural model shows a value equal to 0.34 as GoF indicating, which is a fair amount of the index and also suggests that homogeneity among the measurement items can be assumed in the model.

Looking at the model, all the relationships have acceptable item loadings and t-values in reflective constructs (the smallest loading has a value of 0.678, Table 2). Furthermore, With the exception of "Commodity/Price Risk (M2),"all other item weights are acceptable in comparison to 0.1 as the lower limit in the formative output construct. It is a sign of not severe multicollinearity and redundancy of risk elements (Andreev *et al*., 2009) and also the a sign of the items weights and t-values are in favor of the suggested framework.

CONCLUSION

Relevant to the purpose of this study, the proposed conceptual research model underlined the most influential elements in Persian banking and relationships between five major sources of risks namely credit, liquidity, operational, market and unique risks in Islamic banks in Iran. Thereafter, each risk element was divided into their related MVs and dependence between each risk factors and corresponding risk elements was analyzed. Finally, their impacts on total risk were tested to ensure validity and reliability of the model.

As a result, the concept of the model is underpinned statistically. Accordingly, there are clearly five distinct risk constructs which impact Islamic banks in Iran directly and effectively. The research model put forward to provide knowledge about the causal relationships between five risk elements which aggregates interactions with conventional and unique risks which banks deal with in terms of total risk in Iran. Hence, policy makers and Chief Financial Officer (CFO) can now discuss plans revolving around the major areas instead of dealing with too many separate risks. In fact, relationships between risk categories provide profound insight to evaluate correlations between constructs, essential for planning and resource allocation. This research so far has shown the role of main constructs and their causal framework forming total risk as the output construct.

Owing to the fact that some methods used by conventional banks for risk management are not permitted to Islamic banks, the ability of banks to deal with some risks like credit risk as well as the means available to balance claims and assets are limited in Iran. Consequently, some implications could be summarized to improve effectiveness and competitiveness of Iranian banks, as follows:

- Due to the increasingly growth and potential extents of Islamic banks in Iran, these banks must move towards introduction and development of new and innovative products and services to mitigate risks and optimal utilization of their assets.
- Design, implement and upgrade appropriate information systems are necessary to monitor risks and conduct required changes to manage risks.
- Since there are differences in terms of risks faced by Islamic banks compared to conventional banks, the risk assessment must be employed and updated proper methods to handle these risks by Iranian banks.
- The fast-paced development of Islamic banking necessitates continuously refinement of risk assessment approaches. In other words, Persian banks must follow a continual trend from reactive to active and finally proactive risk management roadmap with a thoroughly shift from loss minimization and control of risk to active portfolio management.
- In order to increase competitiveness and effectiveness in risk management, Persian banks must identify, assess and report various risks and design proper processes and procedures for risk management and then, they should implement risk-based pricing, link risk to return and measure risk adjusted to performance.

As the other studies which occurrences of some problems are inevitable, in this regard the expectation about the response rate was not good enough and consequently, a larger sample could obtain more precise results.

On the whole, the suggested model meets construct validity and reliability and acceptable fitting indices. In addition, this model and its constituent constructs can be a starting point for further research. In this regard, other acceptable constructs can be investigated with more relationships among various risks and more rigorous tests can be applied to compare different acceptable alternative models. In fact, more comprehensive constructs can provide far stronger results and more thorough understanding, especially for CFOs to analysis various risks. Consequently, decision-making about actions which should be taken and proper resources which should be allocated to decrease these risks can be more thorough.

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