A systematic literature review of risks in Islamic banking system: research agenda and future research directions

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Abstract:

This study employs a systematic review approach to examine the existing body of literature on risk management in Islamic banking. The focus of this work is to analyse published manuscripts to provide a comprehensive overview of the current state of research in this field. After conducting an extensive examination of eighty articles classified as Q1 and Q2, we have identified six prominent risk themes. These themes include stability and resilience, risk-taking behaviour, credit risk, Shariah non-compliance risk, liquidity risk, and other pertinent concerns that span various disciplines. The assessment yielded four key themes pertaining to the risk management of the Islamic banking system, namely prudential regulation, environment and sustainability, cybersecurity, and risk-taking behaviour. Two risk frameworks were provided based on the identified themes. The microframework encompasses internal and external risk elements that influence the bank's basic activities and risk feedback system. The macro-framework encompasses several elements that influence the risk management environment for Islamic banks (IB), including exogenous institutional factors, domestic endogenous factors, and global endogenous factors. Thematic discoveries are incorporated to identify potential avenues for future research and policy consequences.

Keywords: Islamic finance, Islamic banking, risk management, and systematic literature review.

1. Introduction

Due to religious codes primarily prohibiting interest, Muslims have parted from conventional banking, leading to the establishment of fifty years old Islamic finance industry (Khediri, Charfeddine, & Youssef, 2015). Since 1980, Islamic banks (IBs) have established themselves as an alternative financial system in many countries (Basiruddin & Ahmed, 2019). Currently, Sudan and Iran are running a complete banking system based on Islamic Shariah, while other countries are allowing conventional banks (CBs) with Islamic window services. The total size of Islamic finance, including capital market and insurance, increased to USD 2.44 trillion by 2019: Q2 (IFSB, 2020), which is mostly dominated by Islamic banks (72.4% share of the total Islamic finance industry) from the Middle East and North Africa (MENA), South Asia, and Southeast Asia. The Islamic banking industry grew at 12.7% year on year. Large international banks are also offering Islamic financial services alongside CBs in Europe and the United States (Khediri et al., 2015).

Islam integrates economic activities with religion, and every activity of a Muslim, from daily chores to international relations is guided by the Shariah law emanated from the Holy Quran, Hadith, Ijma, Qiyas, and Ijtihad (Baele, Farooq, & Ongena, 2014; Gait & Worthington, 2007). Therefore, the definition of Islamic banking should be seen not only from an institutional perspective but also from the perspective written in the holy books. As cited in Yahya, Muhammad, and Hadi (2012), the Organization of Islamic Cooperation (OIC) defined an Islamic Bank as "*a financial institution whose statutes, rules and procedures expressly state its commitment to the principles of Islamic Shariah and to the banning of the receipt and payment of interest on any of its operations* (p. 50)." This founding definition proposes two basic elements: "principles of Shariah" and "prohibition of interest."

Broader domains of prohibitions in Islamic banking include interest, *maisir* (gambling), *gharar* (ambiguity), complex derivatives, short selling, excessive risk-taking, exploitation, and involving business related to tobacco, alcohol, pork, pornography, casino, and weapons (Basiruddin & Ahmed, 2019; Čihák & Hesse, 2010; Zaher & Hassan, 2001). Prescriptions, on the contrary, include almsgiving, sharing profit and loss, productive use of money, fair transactions, clear consequences of contracts, trading goods and services, and recognizing the relationship

between ownership and profit entitlement (Gheeraert, 2014; Ginena, 2014). '*Riba*[1]' and the 'profit and loss sharing' are the two most commonly cited factors distinguishing IBs from CBs (Abdul-Rahman, Sulaiman, & Said, 2018; Chong & Liu, 2009).

Since interest is strongly forbidden in Islam, Shariah-based banks adopt alternative contracts based on trade, leasing, and partnerships (Abedifar, Molyneux, & Tarazi, 2013) to avoid ambiguity, gambling, and financial derivatives (Chong & Liu, 2009). However, only being interest-free is a narrow definition of Islamic finance (Butt & Aftab, 2013), as the broader scope includes building a society based on values, justice, morality, trust, and brotherhood. IBs follow Islamic Shariah while offering financial services to their clients (Imam & Kpodar, 2016). Ideally, The PLS principle based on *mudarabah*[2] and *musharkah*[3] contracts is viewed as a unique characteristic of Islamic banking (Baele et al., 2014; Chong & Liu, 2009; Dar & Presley, 2000; Gheeraert & Weill, 2015).

As a financial intermediary, the basic functions of the IB are similar to those of a CB. However, sharing profit and loss with clients was the central theme that differentiated these two banking systems. PLS facilitates a mutual customer relationship with ownership rights when compared to debt-based financing activities (Dar & Presley, 2000; Mohammad, Asutay, Dixon, & Platonova, 2020). Alongside PLS, IBs, in theory, should operate in a system that promotes economic growth, generates jobs, and fosters social welfare by following common prohibitions on excessive risky investment and production and marketing of non-Shariah compliant products (Aggarwal & Yousef, 2000; Ali, Shirazi, & Nabi, 2013; Asutay, 2007; 2012; Khan, 2010). Shariah-compliant businesses are screened for their degree of involvement with non-compliant activities and financing from conventional sources (Hassan, Rashid, Wei, Adedokun, & Ramachandran, 2019a). IBs have to make use of the tangible and identifiable

[1] *Riba* has been at the centre of mainstream debate categorizing Islamic finance from its counterpart. While many scholars identify *Riba* is the excessive amount of additional payment charged or given on the principal amount, for others it is the fixed or predetermined amount of payment on the top of the principal amount. However, the consensus among Islamic scholars forwards the notion that *Riba* in any form is prohibited in Islam.

[2] *Mudarabah* is a partnership based Islamic finance contract between two parties, one party supplying the finance (*rabbulmal*) while the other party gets involved with their physical labor and skills (*mudarib*), granting each party a share of the income at predetermined ratio.

[3] *Musharakah* is another classical partnership contract in Islamic banking where more than one party contribute in financing a shared company. The contract involves both parties agreeing on sharing profit on an agreed-upon ratio and sharing losses on ratio of equity capital financed.

underlying asset in every financial contract by undertaking their banking operations in a Shariah-compliant way (Cox, 2005). Due to these distinctive characteristics, IBs are exposed to complexities and added control layers (i.e., Shariah screening, supervisory committee) in managing their assets and liabilities (Mohammad et al., 2020).

In general, IBs encounter some risks similar to those encountered by the CBs (Zainol & Kassim, 2012), while some unique risks related to Shariah compliance, market benchmark, and displaced commercial opportunities (Rashid, Ramachandran, & Fawzy, 2017). With the complexities of global financial institutions, risk management in IBs should be interesting for at least three major reasons. Firstly, there are conflicting evidences of risk management and performance connection for IBs in the pre-, during- and post-crisis era (Sorwar, Pappas, Pereira, & Nurullah, 2016). Secondly, the extent of built-in risk management facilities using PLS is declining among IBs globally (Hassan, Aliyu, Huda, & Rashid, 2019b). Thirdly, IBs are less globally diversified than major CBs. Hence, IBs are exposed to pockets of regional risks. These developments and their unique influence on bank sector stability urge renewed interest in investigations on risk management. While our study adds to a large set of multifaceted studies, we identify risk management themes that are expected to expand our knowledge of risk management.

In terms of the comparative riskiness of Islamic and CBs, Islamic scholars are broadly divided. Sorwar et al. (2016) have claimed that market risk is characteristically the same in IBs and CBs. Shariah compliance risk is a unique risk differentiating Islamic and CBs (Zainol & Kassim, 2012; Basiruddin & Ahmed, 2019). Mollah, Hassan, Al Farooque, and Mobarek (2017), however, have argued that IBs are not equally exposed to external shocks when compared to CBs because of the Shariah monitoring of risk-taking behaviour. Similar monitoring makes IBs less vulnerable to insolvency risk due to built-in risk-sharing principles in Islamic financial contracts.

A systematic literature review is nothing new in management (Baker, 2000; Cooper, 1988). The usual nature of these reviews accommodates scholarly discoveries of newness, helps develop logical and clear comprehension of dimensions of the phenomenon of interest, and establishes gaps for further research (Rowley & Slack, 2004; Tranfield, Denyer, & Smart, 2003). We intend to critically analyse contemporary literature on risks in IBs in a systematic manner.

Several methods under the broader methodology of systematic review have received wide recognition (David & Han, 2004; Newbert, 2007). However, the past 'review' studies focus on analysis and synthesis, which has been a common drawback in this domain (Fischl, Scherrer-Rathje, & Friedli, 2014). In order to overcome this limitation, based on Brocke et al. (2009), we have applied the five-stage systematic methodology demonstrated in Figure 1.

(Place Figure 1 about here)

The above literature offers a clear distinction between the risk management practices of Islamic and conventional banks. The purpose of this paper is to systematically review extant scholarly works in the field of Islamic banking risk management to identify common themes of Islamic banking risk management. This review is motivated by the need for a thematic synthesis of the risk management practices of Islamic banks. Once major themes are identified, these can be utilised to unearth interrelationships among dominant themes that will help develop new risk management frameworks.

Our review finds that research on Islamic risk management is dominated by Islamic banks from the Muslim majority countries, primarily having a comparative analysis against conventional banking. The review has imparted us with six themes of Islamic bank risk management, namely stability and resilience, risk-taking behaviour, credit risk, Shariah non-compliance risk, liquidity risk, and other issues. Our synthesis summarizes the risks using four research themes. These are regulation and governance, risk-taking behaviour, macro-social environment and sustainability, and technology and cybersecurity. Based on the explored themes, the study created two risk frameworks. The microframework includes internal and external risk factors that influence core processes and the risk feedback system of the bank. The macro-framework includes exogenous institutional, domestic endogenous, and global endogenous factors shaping the risk management environment for the IBs.

The remainder of this paper has the following structure. Section 2 conceptualizes the risks in the Islamic banking system. The review scope is defined in Section 3. Section 4 discusses the systematic literature review and inclusion criteria. Section 5 analyzes and synthesizes the literature. Section 6 proposes two risk frameworks with summary findings and implications.

2. Conceptualization of risks in Islamic banking

As an important component of the systematic review, broader definitions of the basic terminologies of the Islamic banking area are cited mostly from journal articles and checked with books for consistency (Baker, 2000; Zorn & Campbell, 2006).

Islamic financial services are based on risk-sharing joint ventures (Al Rahahleh et al., 2019; Chong & Liu, 2009; Saeed & Izzeldin, 2016). The use of PLS works as a built-in proactive layer of risk management in IBs. Shariah-based banks can pass their asset side shock of *musharaka* investment loss to *mudaraba* depositors, which acts as an extra layer of security in addition to capital (Abedifar et al., 2013; Čihák & Hesse, 2010; How, Karim, & Verhoeven, 2005). As IBs undertake banking operations based on Shariah, religiously motivated customers are found to be subject to fewer default cases (Abedifar et al., 2013). However, the religiosity-loyalty hypothesis can be criticized in the absence of a proper risk management environment (Kabir et al., 2015) and asymmetric level of general Islamic banking knowledge of the customers and bankers (Ahmad, Rashid, & Shahed, 2014).

The risk-taking behavior of IBs differs from that of the CBs in core banking practices, such as the identification and measurement of the sources and uses of funds (Alam, Hamid, & Tan, 2019). Islamic risk management practices are primarily proactive in nature. The first line of defense is 'prohibition of excessive risk-taking' (Safiullah & Shamsuddin, 2018). Secondly, any debt-based instrument and speculative derivatives are generally not allowed in Islamic banking (Kabir, Worthington, & Gupta, 2015). The next stage includes the screening process as Fakhfekh, Hachicha, Jawadi, Selmi, and Cheffou (2016) stated that Shariah restrictions on the selection of the investment sector, such as alcohol and pork. IBs face poor portfolio diversification and higher concentration risk in their portfolios due to the same reason: the exclusion of non-Islamic sectors from investment and financing (ibid). In addition, the prohibition of interest limits the flow of financial resources, which may lead to excessive volatility, bankruptcy, and the eventual demise of IBs.

Due to some of these unique fundamental principles and varying types of risks, Islamic banking scholars considerably differ while categorizing them. While CBs mostly encounter credit risk and market risk, IBs face equity investment risk, credit risk, and market risk (Hassan, Khan, & Paltrinieri, 2019c). Alhammadi, Archer, and Asutay (2020) argued that while some risks

were common among Islamic and conventional banks, Shariah compliance risk is a unique risk in the Islamic financial system. Also, the magnitude of the risks in Islamic banks is different than those in their conventional counterparts, which requires unique regulatory support (Ariffin, Archer, & Karim, 2009). According to Al Rahahleh, Bhatti, and Misman (2019), the Islamic banking system is exposed to several risks that fall under four broad categories: business risk, governance risk, financial risk, and treasury risk (Figure 2).

(Place Figure 2 about here)

3. Defining the review scope

While processing the scope of the review, following the suggestions by Cooper (1988), six integral components of the systematic review were carefully considered. These are focus, goal, perspective, coverage, organization, and audience. Table 1 exhibits the scope of the review undertaken in this study.

(Place Table 1 about here)

4. Systematic literature search and inclusion criteria

Following the techniques of Brocke et al. (2009), we adopted a non-repetitive search method using the major scholarly databases. The search process included six criteria that took place simultaneously during the search process. First, we chose the starting year to be 2010, as the Islamic risk management papers started appearing from that year, covering the wide-ranging impact of the Global Financial crisis on the Islamic financial system. We covered until the year 2020. Second, we wanted the largest possible collection of risk management papers that are of comparable quality. Hence, from the available databases for management research, we have chosen the four most distinguished ones: Science Direct, Emerald, EBSCOhost, and ProQuest. Scholarly databases are the reliable primary sources for conducting academic literature searches (Choudhury, Paul, Rahman, Jia, & Shukla, 2020).

Third, to ensure comparable quality, we considered only peer-reviewed journals. We did not consider conference proceedings for this paper. Fourth, to narrow down the quality of the journal articles, articles published in the Q1 and Q2 percentiles of Scimago Journal Ranking (SJR) 2018 were selected for the review. Appendix A1 lists the journals used in the search

process. Fifth, we used the keyword-matching search process. The keywords were selected from our reading of the risk management process of Islamic banks. The keywords are given in Table 2. These keywords are grouped into four sets and twelve subsets of phrases. Suitable articles with the matching inclusion criteria explained above, and those in line with our research objective have been picked up from the search results. Sixth, we found 80 articles for a systematic literature review after controlling for the above filters. Sometimes, due to unavoidable reasons, required journals can be left out of the search (Zhou & Ye, 1988). A backward-forward search through a timeline is likely to ensure that these journals are chosen for analysis (Choudhury et al., 2020). Therefore, to conclude the search, we undertook a backward-forward method.

(Place Table 2 about here)

(Place Figure 3 about here)

Table 2 shows that the largest collection of academic papers had "Islamic bank" as a common keyword. However, not all of these papers considered risk management or relevant areas as their primary research. For instance, we had to filter out the papers below Q1 and Q2 and simultaneously had to consider papers with a core interest in "risk management" or relevant literature. After applying multiple filters for topics and contexts, we reached a final selection of 80 manuscripts for systematic literature review (Figure 3). Section 5 presents a synthesis of the 80 selected papers by adopting content analysis. Initial analysis revealed that the papers were mainly based in Muslim countries, such as the OIC members, MENA, GCC, South and Southeast Asia. Section 6 presents a summary of the new themes that are used to form a micro-institutional and macro-research framework to deliver useful policy and research information.

5. Analysis and synthesis of the selected literature

While focusing on managing Islamic banking risks, the in-depth analysis revealed that the selected studies could be categorized into six themes. These are 1) stability and resilience, 2) risk-taking behaviour, 3) credit risk, 4) Shariah-related issues, 5) liquidity risk, and (6) others. A summary of these themes is provided in Table 3. Figure 4 populates the frequency and percentage of themes discovered among the papers. Out of the total of 80 manuscripts, the

highest 24% (19 manuscripts) of the reviewed manuscripts prioritized 'stability and resilience' as their core topic of discussion, while the lowest 11% (9 manuscripts) discussed 'Shariah-related issues.'

(Place Table 3 about here)

(Place Figure 4 about here)

5.1 Stability and resilience

The major areas of focus of these studies are financial stability, default risk, political risk, insolvency risk, and market power. Table 3 shows that past authors considered a comparison of stability and resilience between the CBs and IBs. Though their preferred area of investigation was predominantly financial stability and strength (Zins & Weill, 2017), their approaches varied considerably (Mirza, Rahat, & Reddy, 2015; Sorwar et al., 2016). On the risk and stability of IBs, researchers reported leveraged small IBs are stable while managing credit risk in banks in highly Muslim-populated countries (Abedifar et al., 2013). Overall, the size of banks is a major contributing factor to risk and stability (Čihák & Hesse, 2010; Trad, Trabelsi, & Goux, 2017; Ali & Puah, 2018).

While investigating stability in a dual-banking system, Abedifar, Giudici, and Hashem (2017) identified that Islamic banking operating under CB as a window was found to be highly exposed to a systemic event, while dual banking system was the most interconnected banking operation during crisis times. Paltrinieri, Dreassi, Rossi, and Khan (2020) forwarded two-stage monitoring to balance profitability and stability. These are equity-based financing tools and are monitored by the Shariah Advisory Council. Other important topics include the comparative default risk status of CBs and IBs (Pappas, Ongena, Izzeldin, and Fuertes, 2017; Rizwan, Moinuddin, L'Huillier, & Ashraf, 2018; Saeed & Izzeldin, 2016), political risk (Al-Shboul et al., 2020; Belkhir, Grira, Hassan, & Soumaré, 2019; Bitar, Hassan, & Walker, 2017), insolvency risk (Grassa, 2016; Smaoui, Mimouni, & Temimi, 2020), and market power of IBs in the Middle East and Asia (Louhichi, Louati, & Boujelbene, 2020).

5.2 Risk-taking behaviour of Islamic banks

The third-largest group of reviewed papers discussed the risk-taking behaviour of IBs. Studies reported diverse risk-taking behaviour across regions (Akin, Iqbal, & Mirakhor, 2016), ownership structures (Srairi, 2013), different instruments (Warninda, Ekaputra, & Rokhim, 2019), and banks' financing styles (i.e., a transformation from financier to entrepreneur) (Anwer, 2020). Other emerging topics included displaced commercial risk having implications for the regulatory environment and pricing techniques (Archer, Karim, & Sundararajan, 2010), risk-taking behaviour in the dual banking system (Alaabed, Masih, & Mirakhor, 2016; Mahdi & Abbes, 2018), capitalization in terms of regulation and ownership concentration (Hamid, Azmi, & Ali, 2020; Wahab, Saiti, Rosly, & Masih, 2017; Zheng, Moudud-Ul-Huq, Rahman, & Ashraf, 2017), and bank's risk appetite in profit sharing investment account (Hamza and Saadaoui (2013).

5.3 Credit risk

A good number of papers addressed comparative credit risk across IBs and CBs (Baele et al., 2014; Louhichi & Boujelbene, 2016) and profiling of credit risk among IBs (Basher, Kessler, & Munkin, 2017; Sobarsyah et al., 2020). Studies found that a lower default rate was strongly connected to banks being 'Islamic' and contracts being 'partnership-based' (Baele et al., 2014; Alandejani & Asutay, 2017; Chamberlain, Hidayat, & Khokhar, 2020; Kabir et al., 2015). Over the years, economic growth, growth of loans, and growing banks' size and profitability help reduce the proportion of nonperforming loans in emerging economies (Louhichi & Boujelbene, 2016). Lassoued (2018) found that IBs were more vulnerable to credit risk than the CBs. Wiryono and Effendi (2018) extend the loan size versus loan quality hypothesis while explaining the growth of quality loans in IBs.

5.4 Shariah non-compliance risk

Shariah codes are the primary guiding factors in the Islamic banking system. "*The Shariah non-compliance risk arises from institutions offering only Islamic Financial Services' (IIFS) failure to comply with the Shariah rules and principles determined by the Shariah Board of the IIFS or the relevant body in the jurisdiction in which the IIFS operate*" (Oz, Ali, Khokher, & Rosman, 2016). The Shariah non-compliance has further implications on IBs' earnings. AAOIFI (2010) stated, "*if the contract is nullified due to Shariah violations, then this would lead to the emergence of unlawful income and the exclusion of the corresponding transaction's profits from the bank's income*." It carries a far-reaching impact on other risks affecting IBs. Ginena (2014)

argues that Shariah risk may cause legal and compliance risks. BCBS (2001) has defined legal risk as "*the possibility that lawsuits, adverse judgments or contracts that turn out to be unenforceable can disrupt or adversely affect the operations or condition of the bank.*". Shariah non-compliance also carries a significant burden on the operational risk[4] of IBs.

The key interests of the reviewed paper under compliance risk covered an array of topics, such as contracts, corporate governance, Shariah supervision, and disclosure. Shariah non-compliance risk was broadly interlinked with a contractual agreement (Bouslama & Lahrichi, 2017; Noor, Shafiai, & Ismail, 2019; Rosly, Naim, & Lahsasna, 2017). Non-compliance risk could be better managed through effective management of the board size, board independence, the expertise of the board members, and a good governance culture (Basiruddin & Ahmed, 2019; Safiullah & Shamsuddin, 2018). Efficient disclosure practices were found to be important in establishing a strong governance culture (Elamer, Ntim, Abdou, & Pyke, 2019).

5.5 Liquidity risk

Liquidity risk appears from two segments: from the failure to satisfy depositors' withdrawal requests and from the failure to fulfill the request for new loans by potential borrowers (Abdul-Rahman et al., 2018). IBs are susceptible to liquidity risk during a market-wide liquidity crunch as these banks are restricted from borrowing from the conventional marketplace, including funds by the central banks (Safiullah & Shamsuddin, 2018). A similar liquidity problem is generally absent in CBs. Al-Shboul, Maghyereh, Hassan, and Molyneux (2020) have forwarded the religiosity-loyalty hypothesis, which states that the depositors and borrowers of IBs are found to be more loyal, leading to a non-negative impact on political and economic risk on IBs'.

Most of the studies on liquidity risk assessed the comparative determining factors of liquidity risks among IBs and CBs (Abdul-Rahman et al., 2018; Effendi & Disman, 2017; Masood, Younas, & Bellalah, 2017; Megeid, 2017). Berger, Boubakri, Guedhami, and Li (2019) reported that the Islamic banking system created much more liquidity than the conventional system. Effendi and Disman (2017) found that the capital adequacy ratio, financial expansion, financing quality, and nonperforming loans affected the liquidity risk in IBs. In contrast, the liquidity risks of CBs were determined by the financial expansion, financing quality, nonperforming loans, and return on

[4] Operational risk is the potential loss due to inefficient internal processing, system and people, and external factors such as the limited legal support and uncontrollable compliance issues (Čihák & Hesse, 2010).

assets. Masood et al. (2017) showed that the rational behavior of depositors and training had an impact on liquidity risk management. While liquidity risk was inversely connected to credit risk, IBs were found to be better risk managers (Hassan et al., 2019c). Chattha, Alhabshi, and Meera (2020) indicated that IBs were exposed to an increasing rate of return risk when compared to CBs due to the liquidity gap and duration gap. Boukhatem and Djelassi (2020) argued that liquidity risk in the Saudi banking system might be affected by the unique operation of Islamic banking when compared to their conventional counterparts.

5.6 Others

Around 22 percent (18 articles) of the reviewed papers were multi-disciplinary in nature. They looked at a variety of Islamic banking risk themes, such as the displaced commercial risk (Daher, Masih, & Ibrahim, 2015; Toumi, Viviani, & Chayeh, 2019; Touri, Ahroum, & Achchab, 2020); interest rate risk (Ergeç & Arslan, 2013; Ibrahim & Sufian, 2014); stress testing scenario (Chattha & Alhabshi, 2018; Hassan, Unsal, & Tamer, 2016); Islamic hedging instrument (Mohamad, Othman, Roslin, & Lehner, 2014); voluntary risk disclosure (Neifar & Jarboui, 2018); and risk management tools (Mokni, Echchabi, Azouzi, & Rachdi, 2014). These research topics, however, forward two extremes of research and policy interventions: the introduction of data-sensitive modeling at one extreme and the need for qualitative disclosure at the other extreme.

6. Findings and implications

6.1 Summary findings

Using the literature synthesis explained in Brocke et al. (2009), this paper systematically summarizes seventy-six empirical manuscripts published in Q1 and Q2 journals to understand the research pattern and to explore new research and policy dimensions in Islamic bank risk management. The review suggests that risk management in IBs has yet to reach a complete framework. Researchers with a multi-dimensional topic in mind report diverse impacts on the risk management system, culture, and practices. While the lion portion of the risk studies covered a comparative standpoint of conventional and Islamic management, the ideas, practices, and theories underpinning this area are yet to be fully examined. With the comparative view in mind, we suggest investigating with a multi-disciplinary approach. Future investigations should focus on prudential regulation, risk management environment and

sustainability, data-centric risk analysis and cybersecurity, and acceptable risk-taking behaviour.

In the following sections, we will discuss emerging themes that are developed based on the themes of risk management in Islamic banks. These broader themes might be useful to policymakers in Islamic commercial banks and the Central Banks.

(Place Figure 5 around here)

6.2 Implications

6.2.1 Emerging themes

Figure 5 summarizes the research topics identified from the reviewed manuscripts to explore new themes. These themes will help in extending existing scholarly works to include knowledge from other disciplines and emerging theoretical perspectives and to find remedies for risk management failure in the existing Islamic banking system. Of the four research themes proposed, in terms of the conceptual synthesis and relationship, 'prudential regulation and Islamic governance' appeared as important as the 'capital structure and risk-taking behaviour.' Due to increasing geopolitical risks, Islamic banks may not enjoy a safe haven as they had prior to the financial crisis of 2007-08 (Sorwar et al., 2016). However, Islamic banks should look to expand their operation into Islamic and hybrid political regimes that are expected to provide some cushion against political risks (Bitar et al., 2017).

Other two themes include the 'macro social environment and sustainability' and 'technology and cybersecurity.' Despite the distinctive impact, there are grounds to collaborate efforts for efficient risk management (Elamer et al., 2019; Srairi, 2019). Regulatory and institutional cooperation is expected for effective Islamic governance, cybersecurity, sustainability, and to curve risk-taking behaviour. As argued by Archer and Karim (2009), banks should spend more time and money on the harmonization of cross-border regulatory and governance issues and factors relevant to the application of the profit and loss-sharing accounts.

6.3 Conceptual micro-and macro-framework for risks in Islamic banking

We propose two conceptual frameworks (Figure 6 and Figure 7). These frameworks are expected to assist policymakers in understanding the variety of internal, external, global and local risk factors that influence Islamic risk management practices. The microframework primarily relates to the institutional or bank-level risk management that is being influenced by internal and external, but non-global factors. The external factors are divided into four major clusters: economic, political, cultural, and market-related. The internal factors included capacity building, governance quality, corporate culture, and risk appetite. Banks' core processes and feedback systems are connected to these internal and external factors to evaluate the shocks on the core process and the ultimate performance. In an attempt to expand the scope of the model, we propose a macro framework of risk in Islamic banking, which is presented in Figure 7. In this framework, we provide a taxonomy of important determinants on a scale having the scope of risk management at the vertical axis while the objectives of risk management are presented on the horizontal axis.

(Place Figure 6 about here)

(Place Figure 7 about here)

We have presented the influential research issues from a narrower perspective, which is exogenous to institutions or banks, before moving to a wider set of factors – endogenous domestic and endogenous global factors. The research involving a narrow view of the exogenous risk factors focuses on risk-specific and/or Islamic banking principles. These studies aimed at exploring issues relevant to micro risk management, contractual compliance, and risk management instruments. In the case of the domestic endogenous view, the studies highlighted issues in the domestic environment, regulatory relationships, and systemic risks. The aims of these studies were macro risk management, regulatory compliance, and comparison of risk standing between Islamic and CBs (See Rizwan et al., 2018 and Noor et al. 2019 for a review). Finally, the global endogenous view included the development of international standards in the global context. Studies under this category aimed at cross-country comparison, Shariah compliance, and theory building for global risk management.

6.4 Limitations and Future Research

We have considered published articles until 2020 that exclude conference proceedings and book chapters to fit with the quality framework (Q1 and Q2) and the matched sample across databases (i.e., Scopus, and others). Future studies may consider including 2021 and 2022 and show a comparison of risk management practices before and after the crisis periods, including the COVID-19 period.

Compliance with Ethical Standards:

Ethical approval: This article does not contain any studies with human participants or animals performed by any of the authors.

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Appendix A1: List of journals reviewed

No.	Name of the Journal
1	Applied Economics
2	Borsa Istanbul Review
3	Business & Society
4	Corporate Governance (Bingley)
5	Corporate Governance: The International Journal of Business in Society
6	Economic Modelling
7	Emerging Markets Finance and Trade
8	Emerging Markets Review
9	European Research Studies Journal
10	Global Business Review
11	Global Finance Journal
12	Journal of Banking & Finance
13	Journal of Economics and Business
14	Journal of Financial Services Research
15	Journal of Financial Stability
16	Journal of International Financial Markets, Institutions, and Money
17	Journal of Islamic Accounting and Business Research
18	Journal of Risk
19	Pacific-Basin Finance Journal
20	Research in International Business and Finance
21	Review of Finance
22	Review of Financial Economics
23	Risk Management
24	SAGE Open
25	Studies in Economics and Finance
26	The Quarterly Review of Economics and Finance
27	Venture Capital

Tables

Table 1: Review scope

Feature	Classification
Focus	Theories, method, and outcomes of the research
Goal	Integration with a critical view
Organization	Evolutive with a conceptual view
Perspective	Non-modified, naturally engaging
Audience	Academicians, industry participants
Coverage	Representative and exhaustive

Source: Based on Cooper (1988).

Table 2: Search keywords and number of manuscripts before and after filtering

Search terms			Manuscript before filtering	No of manuscript after Databases				
				EBSCOhost	Emerald	ProQuest	Science Direct	Total after filtering
"Islamic banks"	AND	"financial activities"	1981	5	12	2	16	35
	AND	"Financial service"						
	AND	"banking"						
"Islamic finance"	AND	"financial activities"	2466	4	2	6	11	23
	AND	"Financial service"						
	AND	"banking"						
"Risk management"	AND	"financial activities"	1030	2	1	1	6	10
	AND	"Financial service"						
	AND	"banking"						
"Risk in Islamic"	AND	"financial activities"	1464	1	3	0	8	12
	AND	"Financial service"						
	AND	"banking"						
Total			6941	12	18	9	41	80

Notes: Total number of filtered manuscripts reviewed is 80. Manuscripts before the filtering included papers unrelated to risk management in Islamic banks. For instance, there were numerous papers on risk reporting in Islamic countries but conducted on enterprise risk management or other non-bank business-related matters.

Table 3: Key themes of risk management in Islamic banks

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Trad et al. (2017); Čihák and Hesse (2010); Ali and Puah (2018)	Bank size and capital are positively connected to a bank's profitability, stability, and risk management capability. Relatively smaller IBs are financially stronger than small-sized CBs and larger IBs, while larger IBs are financially weaker than the larger CBs.	Size; capital	Stability and resilience
Abedifar, Giudici, & Hashem (2017)	Islamic banking windows are found to be least resilient, highly correlated with market movements, and are most vulnerable to a financial crisis.	Stability; dual banking	
Mirza et al. (2015)	Asset quality and skills to manage financial instability were found to be superior in IBs than CBs.	Business model; financial stability; efficiency in Pakistan	
Louhichi et al. (2020)	Banks' market power can significantly negatively influence the regulatory capacity of capital and banks' risk-taking behaviour.	Competition; market power; MENA; Asia	
Saeed and Izzeldin (2016)	CBs with a lower risk of default experienced a lower level of efficiency. There exists a trade-off between efficiency and risk. IBs, however, found the same negative connection between profitability and default risk.	Bank efficiency; default risk	
Rizwan et al. (2018)	The impact of regulation on risk reduction is different for CBs and IBs.	Financial regulations; probability-of-default	
Zins and Weill (2017)	Due to Basel II implementation, IBs see a significant difference in their approach to risk when compared to CBs. But this difference is costlier to IBs.	Basel II	
Sorwar et al. (2016)	IBs are found to be less risky during the 2008-08 global crisis.	Market risk; pre- and post-crisis	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Grassa (2016)	Due to concentration of ownership, the income structure of the IBs influences their risk of insolvency.	Ownership concentration; insolvency risk; GCC region	
Al-Shboul et al. (2020); Belkhir et al. (2019); Bitar et al. (2017)	IBs are benefited from hybrid and Shariah-based legal systems. The impact of political risk on CBs is much profound compared to IBs.	Political risk; stability; volatility of assets; political systems	
Abedifar et al. (2013)	In terms of credit risk, smaller IBs are found to be more efficient than CBs even though most IBs are found to be levered.	Risk and stability characteristics	
Pappas et al. (2017)	In terms of risk of failure, IBs are much safer than CBs.	Risk of failing and financial stability	
Smaoui et al. (2020)	The development of Sukuk market negatively affects the solvency of IBs, which has no influence on CBs.	Sukuk market development and bank insolvency risk	
Fakhfekh et al. (2016)	Bad news, with a strong connection to volatility, had a stronger impact on CBs compared to IBs.	Volatility dynamics; crisis; GCC	
Ibrahim and Rizvi (2018)	The financial crisis negatively affected the financing supply of the CBs while it did not have the same impact on IBs.	Bank lending, deposits, and risk-taking in times of crisis	Risk-taking behaviour
Mahdi and Abbes (2018)	Banks risk-taking behavior could be clearly categorized into risk-taking and risk aversion based on certain target levels.	Behavioural finance, risk-taking	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Alam et al. (2019)	Completion negatively impacted the risk-taking behaviour of the IBs, even though the same had a positive connection with risk-taking of the overall banking system.	Competition and risk-taking behaviour	
Archer et al. (2010)	Displacing or shifting risk characteristics of the PSIA are highlighted; as such, the risk can be shifted from the deposit holder to the equity holders based on the shifting characteristics of the PSIA.	Displaced commercial risk; profit-sharing investment accounts (PSIA)	
Hamid et al. (2020)	There exists a considerable amount of heterogeneity (homogeneity) between financial development (income diversification) and bank capitalization across IBs and CBs.	Risk-taking; capitalization; income diversification	
Mollah et al. (2017)	While maintaining higher capitalization compared to CBs', IBs have a governance structure that allows them to assume more risks and upgrade their performance.	Governance; risk-taking; financial performance	
Akin et al. (2016)	Risk-sharing finance in OIC countries is explored. The study found that a strong groundwork is needed across the OIC countries to introduce risk-sharing finance.	National financial system's friendliness; finance for risk-sharing	
Zheng et al. (2017); Srairi (2013)	IBs are less exposed to credit risk than the CBs. State-owned banks are more levered than others.	Ownership structure, capital regulation, risk-taking behaviour	
Warninda et al. (2019)	*Mudarabah* is less risky than *Musharakah*. *Musharakah* reports a non-linear influence on credit risk.	PLS financing, IB credit risk, *Mudarabah* and	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
		Musharakah financing	
Alaabed et al. (2016)	Even in Islamic banking, risk shifting has a limit.	Risk management in IBs; OIC	
Wahab et al. (2017)	Capital and risk-weighted asset are positively connected in the long-run. Malaysian banks are relatively safer due to higher capital reserves.	Risk-taking behaviour; capital adequacy; Malaysia	
Anwer (2020)	Banks should play the role of the entrepreneurs in order to understand the risk-sharing mechanisms.	Salam, import transactions, risk-sharing instrument	
Hamza and Saadaoui (2013)	Investment deposit and capitalization are negatively connected.	Volume of investment deposits; capitalization	
Basher et al. (2017)	IBs with higher capital reserves tend to invest in risky ventures.	Bank capital requirements, portfolio risk among IBs	Credit risk
Lassoued (2018)	IBs in Malaysia are less stable compared to the CBs, especially when credit risk is taken into consideration.	Credit risk in IBs; Malaysia	
Chamberlain et al. (2020)	IBs are less subject to credit risk than the CBs.	Credit risk; GCC	
Louhichi and Boujelbene (2016)	NPLs exhibit a positive connection with an increase in provisions, size of capital, and efficient management, and a negative connection with growth of profitability, credit, size of the bank, and positive economic growth.	Credit risk; managerial behaviour; dual banking	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Baele et al. (2014)	The default rate of loans in IBs is half the same with loans from CBs.	Default loans; Pakistan	
Abdul-Rahman et al. (2018)	Liquidity risk in IBs in the short- and long-run depends on their extent and stability of real estate financing.	Financing Structure (FS), bank liquidity risk, Malaysia	
Wiryono and Effendi (2018)	The size of the IBs is influencing the credit risk positively, but financing expansion, financing quality, GDP and inflation influence the credit risk negatively.	Credit risk, macroeconomic and bank-specific factors	
Kabir et al. (2015)	IBs report lower credit risk than CBs based on distance to default model.	Credit risk, accounting information, and assessing credit risk	
Sobarsyah et al. (2020)	Higher loan growth exacerbates credit risk one year ahead, particularly for IBs with higher capitalization.	Loan growth, capitalization, credit risk of Islamic banking	
Alandejani and Asutay (2017)	Nonperforming loans in IBs are affected by their sectoral distribution of financing.	NPL; sectoral distribution of financing growth, GCC	
Aysan and Disli (2019)	For IBs, bi-directional negative causation is running between SME lending and NPL growth.	SME loans; financial conditions of banks	
Basiruddin and Ahmed (2019)	Banks with a qualified board, an especially qualified member of the Shariah board, experienced lesser non-compliance risk.	Shariah non-compliant risk and governance	Shariah related issues

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Noor et al. (2019)	Complying with the characteristics of the contractual obligations is key to reduce non-compliance risk at IBs.	Theory and Shariah risk	(Shariah non-compliance risk)
Safiullah and Shamsuddin (2018)	Qualified SSB members reduce the operational and insolvency risks of IBs.	Differences in risk and role of Shariah supervisory board (SSB) composition	
Bouslama and Lahrichi (2017)	There exists a 'reasonable' limit for risk-taking.	Ethics	
Elamer et al. (2019)	Banks with higher IGQ and from countries with higher NGQ perform high also in RDPs.	Islamic governance quality (IGQ), national governance quality (NGQ), risk management and disclosure practices (RDPs), MENA	
Ginena (2014)	Non-compliance with Shariah may end up making banks costly, financially looser, instability, and ultimately failing.	Shariah risk, corporate governance	
Elamer et al. (2019)	Banks with qualified and independent SSB, block ownership, and good governance at the national level see better operational disclosure.	Shariah supervisory board (SSB), governance structures, operational risk disclosures (ORDs)	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Rosly et al. (2017)	Non-compliance risk adversely affects banks' earnings when the BBA contracts are invalidated in the court of law.	SNCR; *al-bai-bithaman ajil* (BBA) in default	
Hassan et al. (2019c)	Liquidity and stability in IBs are negatively connected.	Assessment of liquidity risk	Liquidity risk
Chattha et al. (2020)	It is found that IBs exhibit diversity in the average duration gap compared to the same in CBs.	Asset-liability management in dual banking systems, and duration gap	
Mahdi and Abbes (2018b)	Higher liquidity across IBs and CBs help reduce risk.	Risk and liquidity management	
Shah et al. (2020)	Possibility of a model on maturity gap risk using diverse return, assets, and liability structures, and benchmark rates across IBs and CBs is explored.	Duration for maturity gap risk management in IBs	
Megeid (2017)	IBs performed poorly than the CBs in managing liquidity risk.	Liquidity risk management, Egypt	
Effendi and Disman (2017)	Capital adequacy (return on asset) influences liquidity risk in IBs (CBs). The financial expansion, financing quality, and nonperforming loans affect the liquidity risks across IBs and CBs.	Micro-economy, bank specificity, and liquidity risk	
Chattha and Alhabshi (2018)	The shock of change in the benchmark rate will be stronger on IBs compared to CBs.	Benchmark rates, net worth risk, duration gap and stress testing	6. Others

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Hassan et al. (2016)	Reduced capital reserve for participation banks in Turkey compared to CBs.	Capital adequacy ratio, stress scenarios, Turkey	
Neifar and Jarboui (2018)	CEO duality may exhibit a positive influence on operational efficiency, thus reduce operational risk.	Corporate governance, Operational Risk (OR) voluntary disclosure	
Srairi (2019)	Lack of transparency in governance and risk management is found among banks from GCC.	Corporate transparency, risk of IBs, Gulf Cooperation Council Countries (GCC)	
Toumi et al. (2019)	Model inconsistencies explored while studying values of the DCR-VaR equity with that of values required by the CBB and IFSB models.	Displaced commercial risk (DCR)	
Ergeç and Arslan (2013)	The conventional interest rate in Turkey affects the IBs, lending concern for monetary policy in a dual banking system.	Interest rate shock, bank deposits and loans, Turkey	
Ibrahim and Sufian (2014)	Changes in real output and price level shocks have a significant impact on Islamic financing.	Islamic financing, key economic and financial variables, Malaysia	
Mohamad et al. (2014)	Islamic hedging products are chosen based on price, reputation of the bank, awareness, and ownership characteristics.	Islamic hedging instrument	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Elgharbawy (2020)	IBs are exposed to operational and non-compliance risk, whereas CBs are exposed to credit and insolvency risk.	Levels of risk, risk management practices (RMPs), Qatar	
Touri et al. (2020)	A model to optimize banks' prudential reserves and distribution of income to depositors is explored.	Management and monitoring of the displaced commercial risks	
Mokni et al. (2014)	Banks using different funding modes might be exposed to diverse risk perception.	Measurement and management of risks, MENA region	
Lee et al. (2020)	While inflation and risk premium cause deposit rates on a unidirectional path, IBs are primarily affected by the risk premium.	Real interest rates, inflation, risk premium, Malaysia	
Rosman and Rahman (2015)	Experience, type and size of the IBs will differentiate the management of equity investment risk.	Risk management practices of IBs	
Kweh et al. (2018)	Risk management styles across IBs and CBs are differentiated by management efficiency (IBs) and income-earning efficiency (CBs).	Risk management and dynamic network performance	
Kisman (2020)	IBs are primarily exposed to credit, operating and market risks, and secondarily to capital and liquidity risks.	Islamic banking and global financing	
Daher et al. (2015)	IBs in private sector will use their capital buffers to safeguard the shareholders from displaced commercial risk.	Ownership structure and DCR	

Author(s)	Key Finding(s)	Focus Area(s)	Themes
Hernandez et al. (2019)	Diversification and risk ministration strategies across the CBs follow the optimal portfolio model.	Tail dependence risk exposure, diversification potential, GCC region	

Source: Summarized by the authors for this study. Only selected studies are presented in Table 3

Figures

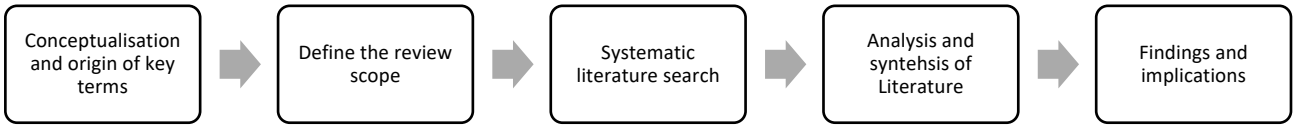

Figure 1: Five-stage systematic review methodology

Source: Based on Brocke et al. (2009).

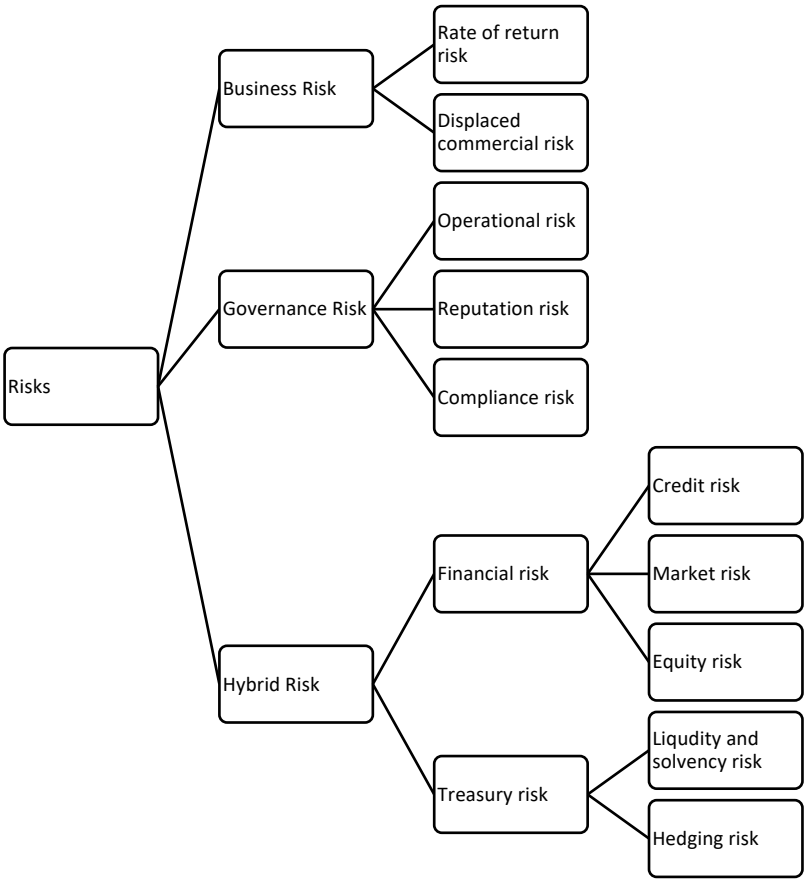

Figure 2: Risks in Islamic banking system.
Source: Modified from Al Rahahleh et al. (2019).

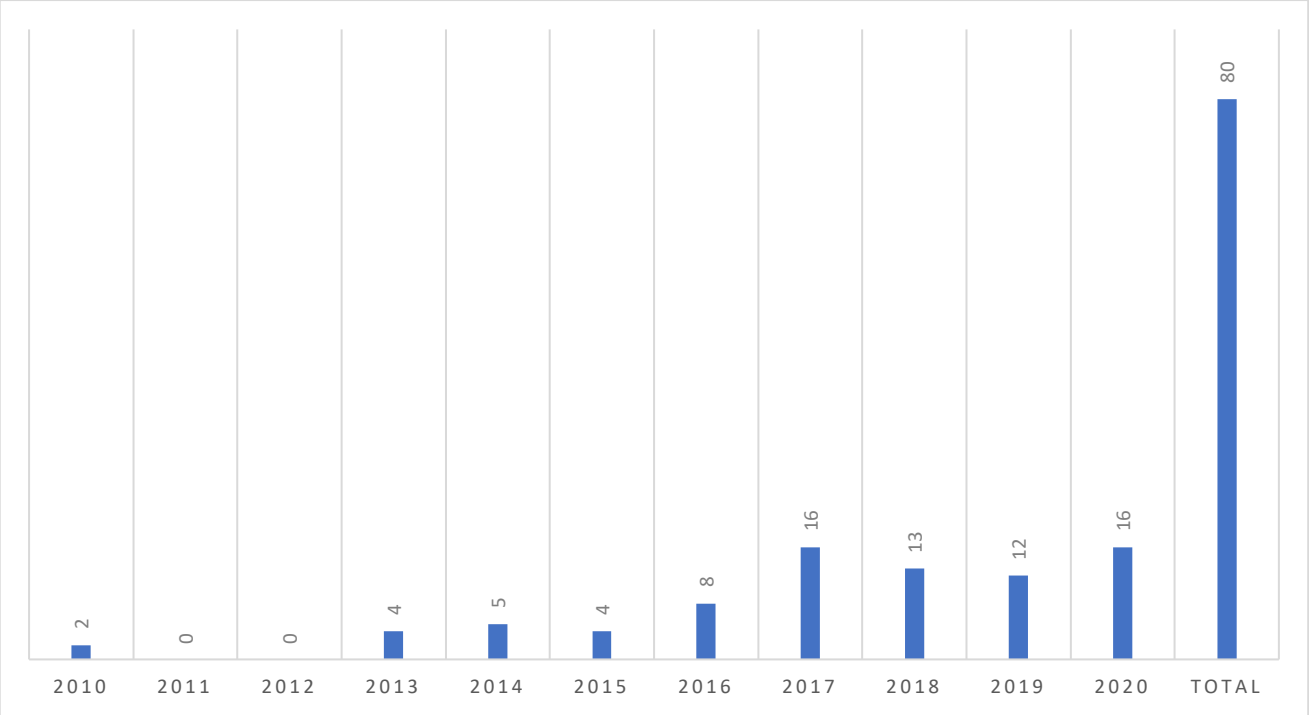

Figure 3: Number of manuscripts each year.

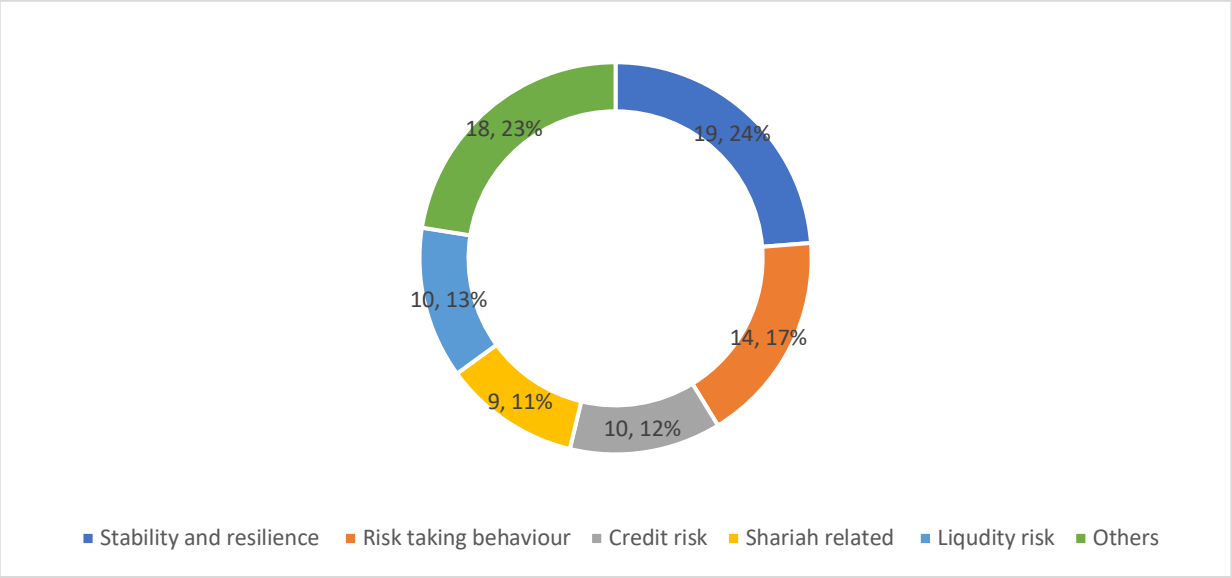

Figure 4: Classification and percentage themes
Note: The values are frequency of the paper and percentage in total number separated by a comma.

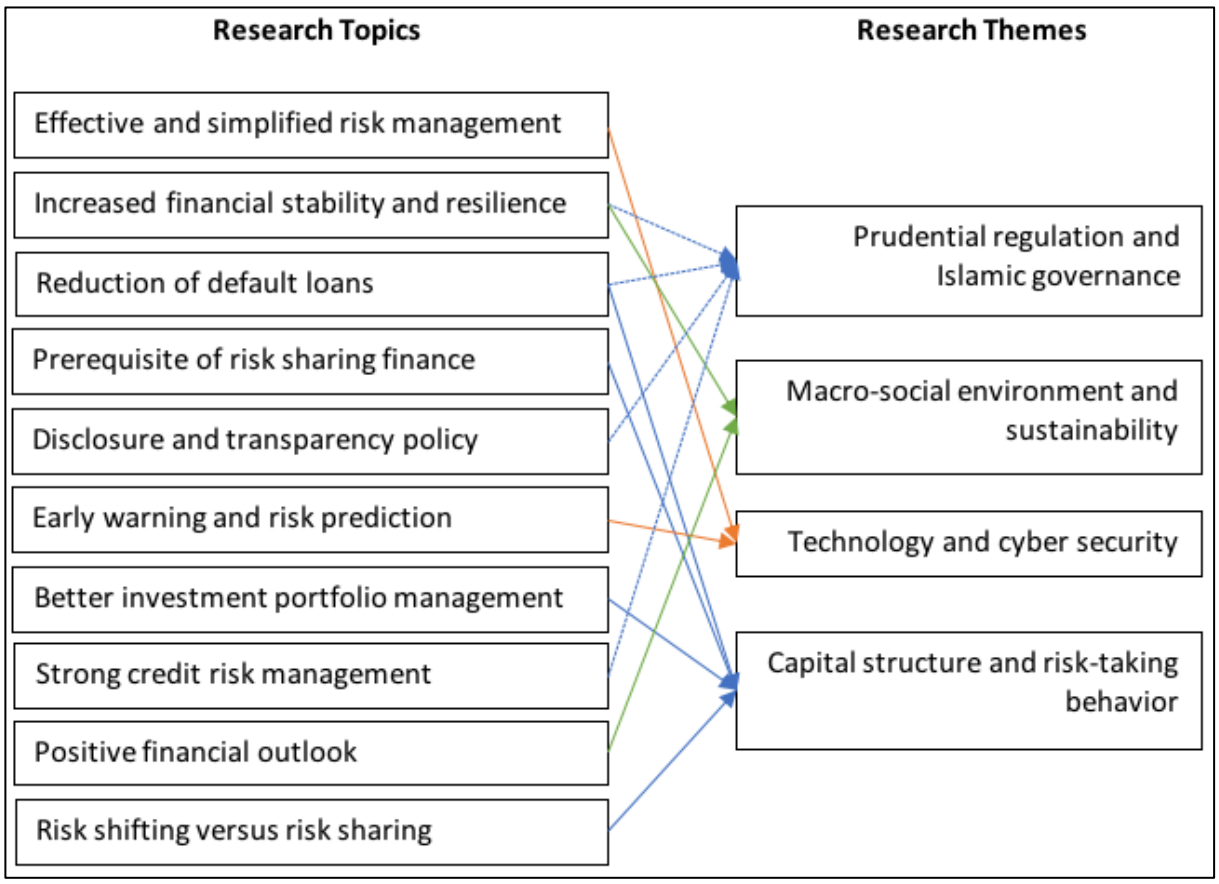

Figure 5: New agenda for risks in *the* Islamic banking system

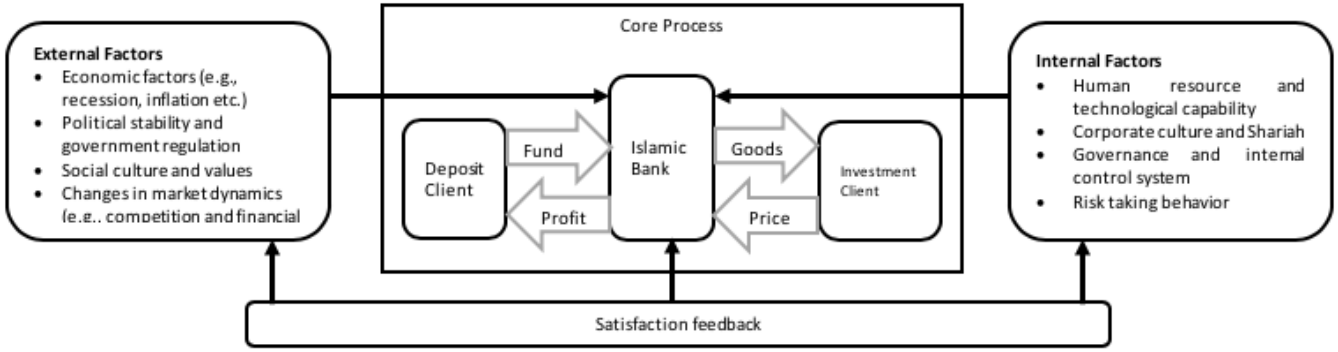

Figure 6: A conceptual micro-framework for risk in Islamic banking

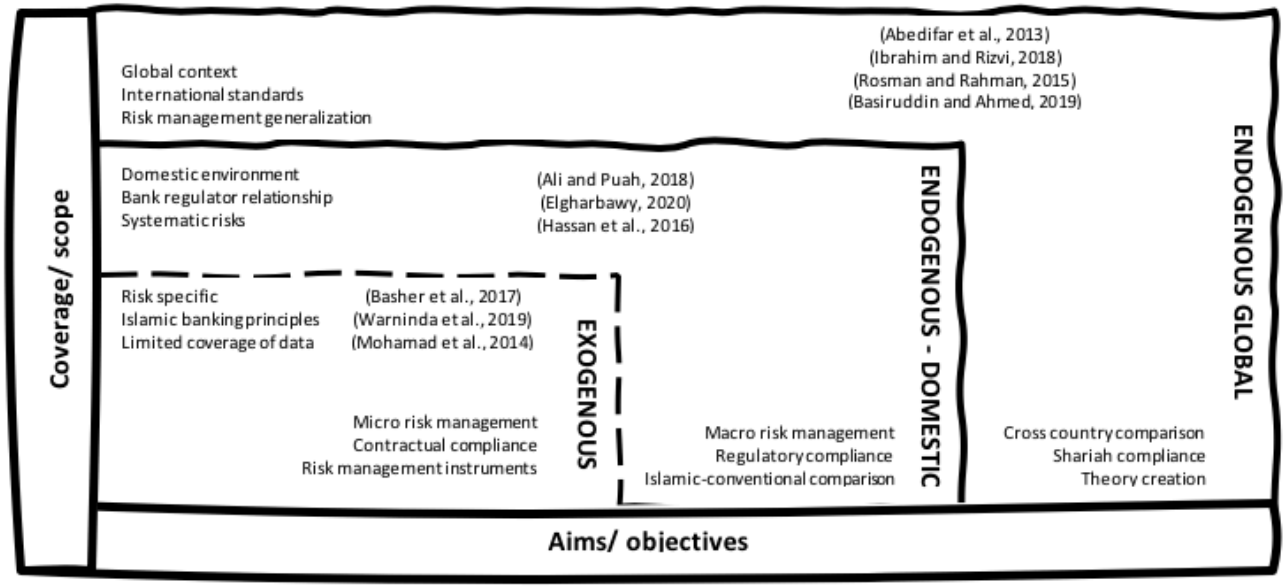

Figure 7: A conceptual macro-framework of risk in Islamic banking