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Operational Risk Management in Islamic Banking; a System Thinking Approach

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Operational risk is closely associated with an Islamic banking institution's daily business. This risk exists before all other risks exist and will always be present in an Islamic banking institution's operation. This research paper aims to explore the operational risk management structure of Pakistani Islamic banking system by developing a system dynamic model through a novel approach, which is system thinking approach, in order to understand the interrelationships between various characters of operational risk and its management. In order to develop the system dynamic model this study is divided into three stages. In the first stage the researcher has developed an initial casual loop diagram based on preliminary knowledge and understanding achieved through literature review on causal interconnections between various variables of operational risk management system. In the second stage semi-structured face to face interviews have been conducted from risk managers to improve, confirm and add in the preliminary model and in the final stage a refined system dynamic model has been developed based on interview data analysis. The model indicates that an escalation in the operational risk induces the Islamic banking institutions to proactively develop a framework to manage the operational risk as per the prudential regulations of the central bank. Therefore, the Islamic banking institutions take steps to manage the operational risk by giving training to their staff, making contingency plans, adopting advanced technology for Islamic banking, improving internal control system, confirming disciplined workplace environment and ensuring compliance with Shariah and fiduciary responsibilities.

Keywords: Islamic Banking, Operational Risk, System Thinking, System Dynamic Model, Risk Management.

INTRODUCTION

An effective and balanced economic system without any financial crisis is the biggest challenge in front of today's world. An effort is in progress by the Muslims of twenty-first century to establish an economic system and financial institutions based on Islamic laws, principles and regulations. In an environment where the whole economic system is based on interest, it is very difficult and challenging task. However, risk sharing which is the base of Islamic financial system has appeared as a substitute to conventional financial system of risk transfer in the era of black swans, difficulties and complications, for a multipolar world (El Tiby, 2011; Mirakhor & Smolo, 2014; Shaukat & Mirakhor, 2017).

Islam is a rules-based system in which a setup of recommended procedures, regulations and principles directs the social, economic, political and legal structure of the society. Compliance with these principles and regulations renders the society a combination of collective support by demanding individuals to share the risks in life (Mirakhor & Smolo, 2014). The main objective of Islamic finance is to form a stable financial system which: fulfils the requirements of the consumers, institutions and state; assists the actual economy; and leads to equal dissemination of wealth in the economy by evading prohibited (haram) actions, contracts and transactions (Saba, 2017).

Islamic banking industry is growing rapidly and with estimated assets crossing US$2 trillion wrapping financial and non-financial institutions, capital markets, money markets and *takaful* in more than 90 countries in the world, including 50 Muslim countries and above 700 Islamic financial institutions all over the world (Saba, 2017). It is expected that by the year end 2018 the Islamic financial market size will touch US $ 3.4 trillion (Naveed, 2016). In some Islamic countries the growth of Islamic banking is more than conventional banking and it is also gaining huge popularity in non-Islamic countries like England, South Africa, Singapore, Sri Lanka, USA, Germany, Australia and Luxembourg etc. (The World Bank, 2015). According to Islamic Finance Bulletin (2016), Islamic financial industry has grown 3.6% as compared to 1.5% of non-Islamic industry between 2011 and 2015. Growth of Islamic banking indicates that it is no longer limited to the Muslim world. It's less risky and ethical attributes are attracting non-Muslim world as an alternative of conventional banking (Saba, 2017).

All banking institutions must face various risks such as currency risk, rate of return risk, commodity risk, credit risk, operational risk, reputational risk, legal risk and liquidity risk due to their nature of business. Islamic banking is exposed to not only the risks of conventional banking but it also has its own unique risks because of its different asset class and liability structure (Abdul Rahman, Tafri, & Aljanadi, 2010; El Tiby, 2011; Hassan, 2009; Iqbal & Mirakhor, 2011; Schoon, 2016). The new types of risk exposures, which Islamic banking institutions have to face are outcome of its principles to comply with *Shariah* (El Tiby, 2011; Khan & Ahmad, 2001). Furthermore, the nature of some risks faced by Islamic banking institutions is much different from their conventional peers because of the unique risk characteristics inherent in the Islamic modes of financing (Eid, 2012). Among all the risks faced by

Islamic banking institutions, operational risk is the most important risk and its importance has increased significantly in the last few years (Dar, Azeem, & Masood, 2013).

Academia, practitioners and regulators are agree to the point that effective risk management of operational risk is essential for the success and survival of the banks, either Islamic or conventional, and its importance is increasing overtime, particularly after the great recession (Rehman, Benamraoui, & Dad, 2018). An effective risk management system not only minimizes the effects of risks on the performance of banks but also safeguards the whole banking industry from any serious breakdown or crisis (Aebi, Sabato, & Schmid, 2012; Akkizidis & Khandelwal, 2008; Kao, Lin, Hsu, & Chen, 2011).

Islamic banking in Pakistan is at its early stage. However, it is growing rapidly in this era of economic uncertainties and competition. Hence, catching the interest of the researcher to throw light on the operational risk exposures confronted by Pakistani Islamic banking institutions. This research paper aims to explore the risk management structure of Pakistani Islamic banking system regarding the operational risk by developing a System Dynamic Model (SDM) through a novel approach which is system thinking approach. Operational risk is one of the most crucial risks faced by Islamic banking institutions and it is vital to know the interrelationships between various characters of operational risk and its management. Therefore, this study uses system thinking approach to draw causal loop diagram in order to: identify, understand and document the dynamic behavior of various operational risk management variables in the risk management system of Pakistani Islamic banking institutions; grasp various operational perspectives of the system; and utilize the gained knowledge for making the system better.

As this paper aims to explore the operational risk management structure of Pakistani Islamic banking institutions; it becomes very important to decide, what is the best way to achieve this objective? One way of describing the working of a system is to; study the system through literature; confirm and modify it by integrating practical and theoretical approaches; incorporate changes; and present this exploration in the shape of paragraphs, which is a traditional style of presenting the working of a system. However, this study has used system thinking approach to visualize the working of a system through causal loop diagram, which graphically represents complete working of a complex system. This approach implies that base for understanding lies in construing interrelationships within the system. The interrelationships which are the reason of behavioral patterns and events we presume (Bellinger, 2004). So, this study adds to the current body of knowledge by explaining operational risk management through a comprehensive modelling approach which visually represents this complex system, with the aim to develop indepth understanding about cause and effect relationships of different variables of operational risk management by building and rebuilding system structure. Moreover, this study has taken into account not only the Islamic banks but also the conventional banks with Islamic branches, which distingushes this study from others in the local context by presenting detail visualization of complete system rather than presenting a part of the system. Finally, the systematic representation of operational risk management structure of Pakistani Islamic banking institutions is very helpful for all the stakeholders of this system, as this approach makes the system easy to understand.

Conceptual Framework

Operational Risk

Initially operational risk was considered an unquantifiable risk faced by the banks but its definition has evolved in the last few years (Dar et al., 2013). Operational risk in Islamic banking institution may arise from its poor or abortive processes, people and systems or due to external occurrences. *Shariah* non-compliance risk and legal risk are part of operational risk. However, reputational risk and strategic risk are not included in it. (Abdullah, Shahimi, & Ismail, 2011; Dar et al., 2013; Islamic Financial Services Board, 2005; State Bank of Pakistan, 2008). The operational risk usually arises from the internal activities of the bank such as staff member's casualness, inadequate internal procedures and systems. However, various unpredictable and uncontrollable external events such as flood and terrorist's attack may also cause operational risk in an Islamic banking institution (Crouhy, Galai, & Mark, 2006; Saunders & Cornett, 2011). According to Archer and Abdullah (2007), operational risk in Islamic banking can be divided into following three types:

- Operational risk arising from different kinds of banking activities and it is similar for all banking institutions. However, operational risk may also arise from the contract drafting and execution of asset-based nature of financing instruments like *murabaha*, *salam, istisna* and *ijarah* which is specific for these products.
- Shariah non-compliance risk taking place because of non-compliance with *Shariah* rules and regulations or non-compliance with the fiduciary responsibilities as *mudarib*.
- Legal risk arising from banking operations or due to legal ambiguity in understanding and enforcing the *Shariah* compliant financial contracts.

As per the definition of operational risk in Islamic banking institutions the following risks are also part of the operational risk.

Shariah Non-Compliance Risk

The relationship between an Islamic bank and its customers is not only limited to an agent and principal but it is also based on the trust and beliefs of the customers that their bank will comply with all the rules, principles and regulation given by Islamic *Shariah*. This is basically the main difference that distinguishes Islamic banks from their conventional peers (DeLorenzo, 2007). However, If an Islamic bank fails to comply with the *Shariah* rules and regulations as prescribed by the regulatory authority and its *Shariah* advisors, it is exposed to *Shariah* non-compliance risk (State Bank of Pakistan, 2008). It is responsibility of the Islamic banks to ensure that all the banking contracts from documentation to execution are fully in accordance to *Shariah* rules and principles (Islamic Financial Services Board, 2005).

Non-compliance with *Shariah* breaks the confidence and trust of the customers and adversely affect the reputation and creditworthiness of an Islamic bank. This situation leads to excessive withdrawal by the customers, hence, triggering the liquidity crisis (Eid, 2012). Now the Islamic banking is at initial stage. So, to compete with its conventional peers in the competitive environments, the Islamic banks should have to be very careful in executing the banking transactions because any bad incident can damage the reputation of whole Islamic banking industry. Furthermore, not only the banking transactions but also the personal attitude and behavior of the banking staff members is very important in this regard.

Fiduciary Risk

Fiduciary risk takes place when an Islamic bank fails to fulfil its fiduciary responsibilities. In other words, fiduciary risk arises when an Islamic banking institution is held legally liable for breaching the investment contract either for non-compliance with Shariah rules and principles or for mismanagement of the funds provided by its investors (Moore, 2009). Fiduciary responsibility of an Islamic bank is to act in the best interests for its all stake holders. When actions of a bank deviates from these objectives, it is exposed to fiduciary risk (Eid, 2012). Fiduciary risk further exposes the bank to legal and regulatory consequences, reputational risk and withdrawal risk which ultimately leads to liquidity crisis for the bank.

Legal Risk

Legal and regulatory risk arises from not complying with legal and regulatory requirements by the banking institutions (Djojosugito, 2008). This risk may also arise due to violations, errors or negligence on the part of the bank to fulfil legal and regulatory requirements, procedures and/or ethical standards (Schroeck, 2002). Legal risk in Islamic banking may also be caused by: inadequate legal framework; conflict of *Shariah* rules and regulations with legal decisions; and conflict between Islamic laws and prevailing conventional laws (Ahmed & Khan, 2007; Akkizidis & Khandelwal, 2008). Legal risk can adversely affect the reputation of a bank which may lead to reduced business opportunities and liquidity problems (Crouhy et al., 2006; Sokolov, 2007).

The next section provides brief explanation of system thinking approach

System Thinking Approach

System thinking is basically a way to understand how things work. It is a way to seek pattern of behavior by going beyond the events, a perspective which looks for systematic interrelationships that are responsible for the behavioral patterns and events (Sherwood, 2002; Bellinger, 2004). This is a system which implies that base for understanding lies in construing interrelationships within the system. The interrelationships which are the reason of behavioral patterns and events we presume (Bellinger, 2004). System thinking is a combination of three components: elements (Characteristics), interconnections (the way these elements relate to each other) and a purpose (a function), where purpose is the most crucial part of the system (Meadows, 2008). Adoption of system thinking has considerably increased in various fields such as health (Peters, 2014; Leischow, et al., 2008; Kapp, Simoes, DeBiasi, & Kravet, 2017), information technology (Ivanov, 1991; Jokonya, 2016), education (Boersma, 2011; Rodriguez, 2013; Shaked & Schechter, 2016), infrastructure (Alasad, Motawa, & Ougunlana, 2013) and business and management (Jonker & Karapetrovic, 2004; Rajagopal, 2012; Dutta, 2001; Skarzauskiene, 2009).

System dynamics is a comprehensive modelling approach which visually represents complex systems with the aim to develop indepth understanding about interrelationships of different parts of the systems through building and rebuilding system structure (Sterman, 2001; Alasad, Motawa, & Ougunlana, 2013). It is a combination of philosphy, theory and methods needed to analyze systemetic behaviours not only in business and management but also in politics, health, engineering and economic behaviours (Hjorth & Bagheri, 2006). This method has established the development of Casual Loop Diagrams (CLD) which are a powerful graphic tool to capture mental models. This qualitative model is dependant on feedback loops, exploration of these feedback loops can provide valuable intuitions into probable long term behaviors (Moscardini & Vlasova, 2003; Richmond, 1993). A causal loop diagram (CLD) is a combination of four components: the variables; the links between the variables; the signs of the links (which indicate about the interconnection of the variables); and sign of the loop (which indicates the type of behavior system will produce). By connecting togather various loops we can form brief explanation about a specific problem (Lannon, 2018).

The first step in CLD is the identification of the variables (things, actions or feelings) that are importatnt to the problem, where a variable is something that can change over time. The variables are connected through causal links (arrows) which display the relationship between them with polarities (Positive '+' and negative '-' signs). The positive (+) sign shows that any variation in one variable induces the variation in other variable in the same course and negative (-) sign indicates that any variation in one variable induces the change in other variable in the reverse direction (Alasad, Motawa, & Ougunlana, 2013).

Methodology

This study aims to achieve comprehensive understanding regarding the operational risk management structure of Pakistani Islamic banking system by utilizing system thinking approach. Where, system thinking is basically an approach used for model development to increase the comprehension of how things work. It is a way to seek pattern of behavior by going beyond the events, a perspective which looks for systematic interrelationships that are responsible for the behavioral patterns and events (Sherwood, 2002; Bellinger, 2004). This study has adopted inductive research approach to answer the research question by utilizing qualitative research strategy for the development of qualitative system dynamic model. Moreover, case study research design has been used by taking Pakistani Islamic banking system as a case. Total five full-fledged Islamic banks and sixteen conventional banks with Islamic branches are operating in Pakistan. All these banks constitute population of this study. Moreover, the researcher adopted purposive sampling technique to collect the interview data from the risk managers of all selected banks. The researcher contacted and collected data through face to face semi-structured interviews from one senior risk manager of each selected bank. As aim of this study is to examine the operational risk management structure of the Pakistani Islamic banking sector. Therefore, the risk managers are the most relevant individuals for this study. They are not only the experts of the system but can also productively add, validate and confirm the preliminary causal loop diagram. The respondents of the interviews were very senior bankers with having, on an average, more than fifteen years banking experience and more than eleven years risk management experience. These experts were very busy people; therefore, the researcher could not form an expert panel.

In order to develop system dynamic model, this study is divided into three stages. In the first stage the researcher develops an initial casual loop diagram based on preliminary knowledge and understanding achieved through literature review on cause and effect relationship among the characters of operational risk management system. In the second stage semi-structured face to face interviews have been conducted from risk managers to improve, authenticate and add in the CLD and in the final stage a refined system dynamic model is developed based on interview data analysis. This causal loop diagram provides a medium for articulating for our understanding regarding the dynamic and interconnected nature of the Pakistani operational risk management structure. This model also facilitates to gain deeper and specific understanding regarding various operational risk management practices of Pakistani Islamic banking system. This makes system more expressive and implicit by using causal loop diagrams rather than being invisible.

Development of System Dynamic Model

Preliminary Causal Loop Diagram

Keeping in mind the complex system of operational risk management in the Pakistani Islamic banking system this paper adopts system thinking as procedural approach to ascertain, comprehend and draw a chain of causality between different variables of operational risk in the Pakistani Islamic banking system and the risk management policies that are in practice. Therefore, this paper has used qualitative SDM to draw a causal loop diagram for; understanding the dynamic behavior of various operational risk management variables in the risk management system of Pakistani Islamic banking institutions, grasping different operational perspectives of the system, identifying and documenting interconnections between various characters of the Islamic banking risk management system in Pakistan, and utilizing the gained knowledge to make the system better.

In this study the use of system thinking approach is restricted only to the development of casual loop diagram to capture the existence of causal relationships among various variables of operational risk management in the Islamic banking institutions of Pakistan. In order to develop an improved causal loop diagram the researcher firstly developed an initial causal loop diagram (Figure I) on the basis of preliminary knowledge and understanding achieved through literature review on causal relationships among different variables of operational risk management in the Islamic banking system of Pakistan. Secondly the researcher went for confirmation as well as productive advice through interviews regarding the construction of system dynamic model from the experts of the field to present an improved causal loop diagram (Figure II).

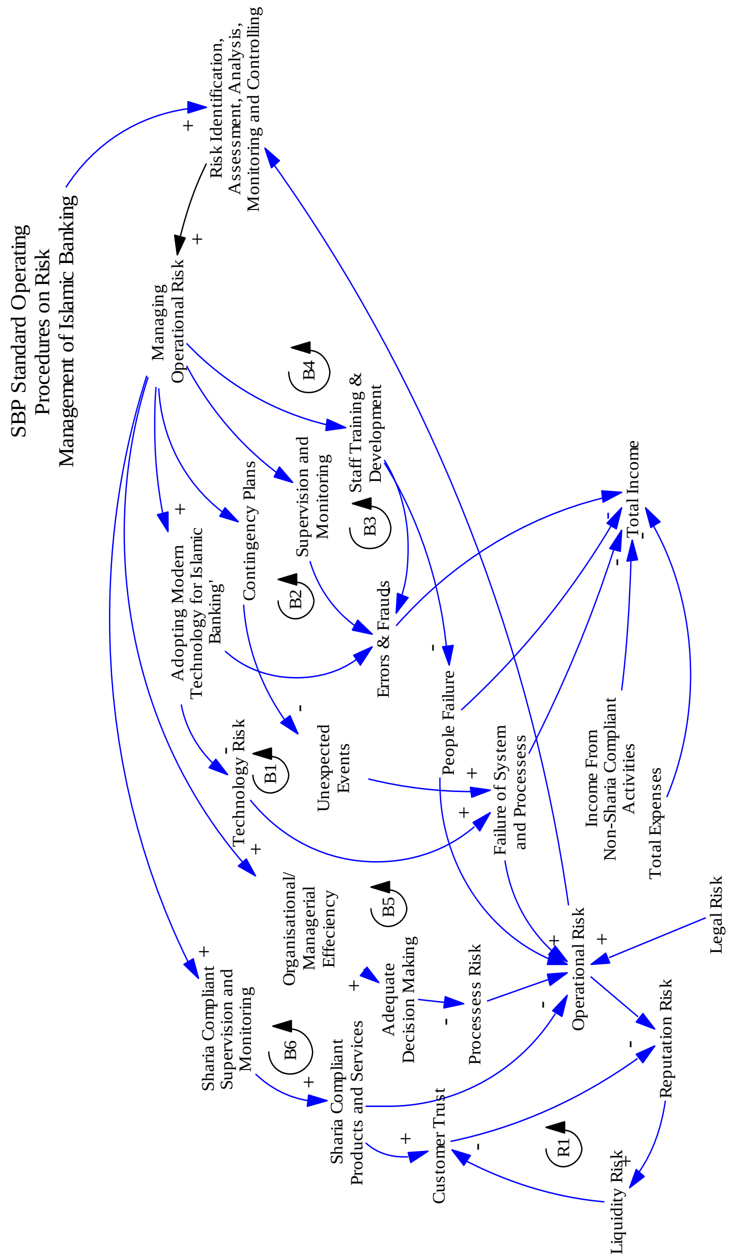

Figure I: *Preliminary Causal Loop Diagram for Managing Operational Risk*

Validated Causal Loop Diagram

Managing operational risk (MOR) in the Pakistani Islamic Banking system is explained in the shape of a sub system causal loop diagram in figure II. This figure is developed after incorporating all the insights gained from semi structured interviews of risk managers. This diagram consists of eight balancing feedback loops (B17, B18, B19, B20, B21, B22 and B23) and one reinforcing feedback loop (R5).

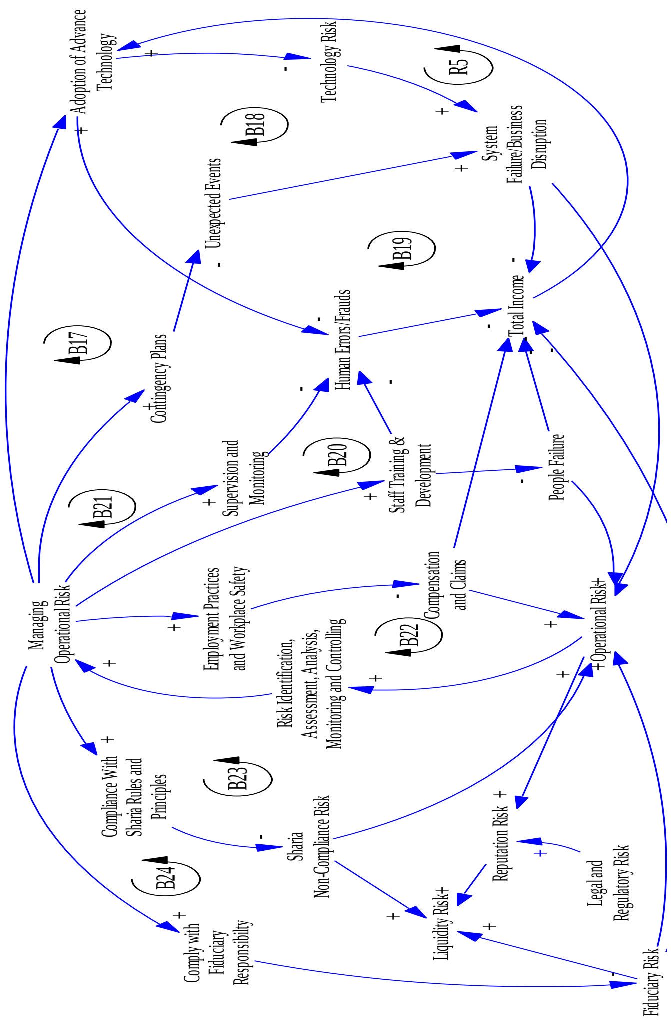

Figure II: Validated Causal Loop Diagram for Managing Operational Risk

In the figure II the B17 loop (Consisting of: MOR → Adoption of Advanced Technology → Human Errors/Frauds→ Operational Risk → RIAAMC) indicates that human errors and frauds,which has positive impact on operational risk. Hence, the Islamic banking institutions in Pakistan spends huge amount to acquire sophisticated technology to reduce the possibilities of human errors and frauds so that operational risk can be minimized (Shafique, Hassan, & Hussain, 2013). The loop B18 (Consisting of: MOR→ Adoption of Advanced Technology → Technology Risk → System Failure/Business Disruption → Operational Risk → RIAAMC) specifies that adoption of sophisticated technology reduces the technology risk. However, where there is a technology there is a problem. The technology can cause system failure/business disruption (Eid & Asutay, 2016; Greuning & Iqbal, 2008). Technology risk in Islamic banking is more complicated than in conventional banking because these banks have to invest more in advanced technology to make their system tailored specifically for Islamic banking as systems of conventional banks may not be appropriate for Islamic banks (Brown, Hassan, & Skully, 2007; Eid & Asutay, 2016). So, the banks makes huge investment in advances technology to increase the efficacy of their information technology, in order to not only make it competitive for *Shariah* compliant Islamic banking but also to reduce; human errors/frauds, system failures, data hacking, virus attacks, and network failure (Eid, 2012).

The B19 loop (Consisting of: MOR → Contingency Plans → Unexpected Events → System Failure/Business Disruption → Operational Risk → RIAAMC) indicates that unexpected events like terrorism, earthquakes, floods, robbery and forgery etc. can also expose the banks to operational risk (Akkizidis & Khandelwal, 2008). So, the Islamic banking institutions in Pakistan make contingency plans to resume the business operations efficiently in case of any unexpected event.

The B20 loop (Consisting of: MOR → Staff Training & Development → People Failure → Operational Risk → RIAAMC) shows that people failure is also a cause of operational risk in Islamic banking which is minimized by providing training to the staff (Mahlknecht, 2009). Islamic banking instructions in Pakistan organize training and development programs for their staff to make them more effective and efficient in performing banking transactions and to make them capable for dealing with *Shariah*-compliant financial activities. The B21 loop (Consisting of: MOR→ Supervision and Monitoring→ Human Errors/Frauds → Operational Risk → RIAAMC) indicates that more efficient the supervision and monitoring mechanism an Islamic bank has the less human errors and frauds can take place (Fayyaz, 2006). A better internal control system also contributes in the total income of the banks.

The B22 loop (Consisting of: Employment Practices and Workplace Safety → Compensation and claims → Operational Risk → RIAAMC) indicates that inadequate workplace safety or employment practices can expose banks to compensation and claims, which ultimately affects bank's profitability. The Islamic banking institutions in Pakistan have a strong mechanism which addresses swiftly to any issue relating to work discipline, employment practices and workplace environment.

The relationship between the Islamic banking customers and Islamic banks is not limited to agent and principal; it is founded on the trust that Islamic banking institution will respect its customer's desire to completely observe *Shariah* principles (Wilson, 2002). If a bank does not comply with *Shariah,* it breaks the trust of its customer and can severely damage bank's reputation which can lead it to liquidity problems. The B23 loop (Consisting of: MOR→ Comply with *Shariah* Rules and Principles → *Shariah* Non-Compliance Risk → Operational Risk → RIAAMC) indicates that sensitivity of being *Shariah* compliant induces the risk management division of Islamic banks to make a mechanism that implements *Shariah* compliant products, services and operations as per the expectations of their customers. This loop further indicates that any non-*Shariah* compliant activity may expose the banks to liquidity risk.

Islamic Banking Institutions are expected to act in the best interest of its stakeholders by complying with their fiduciary responsibility. Non-Compliance with the fiduciary responsibilities exposes the banks to fiduciary risk (Moore, 2009). The B24 loop (Consisting of: Managing Operational Risk

→ Comply with Fiduciary Responsibility → Fiduciary Risk → Operational Risk → RIAAMC) explains that as per the prudential regulations issued by the SBP, the Islamic banking institutions perform in accordance with their fiduciary duties. This leads the banks to act with due care while handling the funds of its depositors and share profit and loss in accordance with its agency and fiduciary responsibilities.

The R5 reinforce feedback loop (Consisting of: Total Income → Adoption of Advance Technology → Technology Risk → System Failure/Business Disruption) states that when there is an increase in bank's income it induces the banks to spend more on advanced technology to counter the technology risk. Reduction in technology risk also smooths the business operations of the banks and reduces the chances of system failure. Consequently, it has positive influence on the total income of the banks and vice versa (Brown et al., 2007).

Collectively figure II indicates that an escalation in the operational risk induces the Islamic banking institutions to proactively take steps for managing operational risk as per the prudential regulations of State Bank of Pakistan. The figure also indicates that operational risk takes place in Pakistan due to non-compliance with *Shariah* and fiduciary responsibilities, failed systems, people and processes (Shafique et al., 2013). Therefore, the Islamic banking institutions take steps to manage the operational risk by giving training to their staff, making contingency plans, adopting advanced technology for Islamic banking, improving internal control systems, confirming disciplined workplace environment and ensuring compliance with Shariah and fiduciary responsibilities (Abdullah, Shahimi, & Ismail, 2011; Shafique et al., 2013; Wahyudi, Rosmanita, Prasetyo, & Putri, 2015).

Conclusion

The State Bank of Pakistan has provided guidelines in 2008 to ensure the presence of efficient risk management framework in the Islamic banking institutions of Pakistan (State Bank of Pakistan, 2008). Over the last decade Islamic banking is expanding in Pakistan and creating more challenges for these banks to counter the potential operational risk exposures. The validated final system dynamic model demonstrates that Islamic banking institutions have formulated a comprehensive plan of action for identifying, assessing, understanding, analysing, monitoring and controlling operational risk exposures as per the guidelines of the State Bank of Pakistan to avoid any potential loss. The model also indicates that the Pakistani Islamic banking institutions have developed efficient mechanism to counter various risks under the guidelines provided by the regulatory authority which support the homogenity assumption of instituional theory (Collier & Woods, 2011; DiMaggio & Powell, 1983). This qualitative model provides very helpful and useful insights for managers, scholars, shareholders, policy makers and regulators to understand the operational risk management behavior of Pakistani Islamic banking system. Furthermore, this model also provides support to the Board of Directors and senior management of not only the Pakistani Islamic banks but also to the Islamic banks all over the globe for designing a comprehensive, effective and efficient operational risk management framework by overcoming any deficiency in their existing system. It is finally concluded that while managing operational risk, Pakistani Islamic banking institutions are not throwing cautions to the wind, but they are playing it safe.

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