

IDENTIFICATION OF EFFECTIVE PROCESS FACTORS ON OPERATIONAL RISK IN BANKS (CASE STUDY: KESHAVARZI BANK BRANCHES IN ZANJAN CITY)

Zahra Jafari,
zahrajafari241@yahoo.com
Davar Mahikar,
Davarmahikar@gmail.com

Abstract. On the one hand, Increasing rate of operational losses, and as rapid technological changes, increasing number of customers, electronic commerce and globalization of the economy and more complex banking transactions, large mergers and separations, causing more important of operational risk and its management. Identification and quantification of operational risk is not easy and is highly dependent on the structure of the internal processes and internal controls. This descriptive - survey research was conducted aimed to Identification of effective process factors on operational risk in the bank branches in Zanjan city (years of 2010-2014) by using Kolmogoroff-Smirnoff test and one -sample T test. Findings indicate the manner of service offering to customers with a value of 3.95 have greatest impact on operational risk management and hardware and software systems with a value of 3.66 and manner of communication between the staff with a value of 3.12 ranks next. Bank internal processes are effective on the bank's operational risk management. Also, the effect of environmental factors on the bank's operational risk management in the Keshavarzi bank rejected. So, the establishment of suitable internal controls, observance of circular letter by employees, assessment of employees' information, not involving personal interests of employees in banking affairs, and employees' update information are effective in operational risk management and better control of resources and its profitability.

Keywords: Risk, Operational Risk, Risk Management, Effective Risk, keshavarzi Bank branches in Zanjan city.

Introduction. The risk is an issue that each economic institutes is facing. Also, in financial institutions have different kinds of risk. The identification, measurement and management of them is one of the essential tasks of top management in such organizations. The most important risks in the financial institutions such as banks can pointed to credit, market and operational risk (Erfanian, 2007, 116).

Operational risk has been defined as the risk of loss resulting from inadequate or failed internal processes, people and system or from external events. It includes legal risk but exclude strategic and reputational risk¹. The definition attempts to categorize underlying causes of operational risk in a much broader prospective i.e. people, processes, systems and external factors. However, the scope of operational risk does not include following events (and resultant losses) as these are to be covered under Pillar 2 of Basel II accord.

i. Strategic Risk - senior management's business decisions in normal course of business which do not violate any rule, regulation etc.

ii. Reputational risk – as it arises mainly due to occurrence of other risk events.

Operational risk is an evolving discipline and hence significant flexibility is available to banks in developing operational risk measurement and management systems. Some of the banks have already initiated collection of their operational risk loss data with a view to use the same for the assessment of inherent and residual risks with possible extension towards measurement of risk based performance and allocation of capital. Hence, to provide industry a minimum set of instructions for meeting the supervisory expectation under Basel II requirements and to address some of the key challenges faced by the banks when collecting internal operational losses, SBP has formulated these guidelines with the goal of promoting consistency, completeness and accuracy in the collection of operational risk data which would form the basis for risk analysis and control to be used for effective operational risk management and for moving towards advanced approaches for calculation of operational risk capital charge (Ashraf Khan, 2014).

1.1 Problem Statement

on the one hand, Increasing rate of operational losses, and as rapid technological changes, increasing number of customers, electronic commerce and globalization of the economy and more complex banking transactions, large mergers and separations, causing more important of operational risk and its management. Identification and quantification of operational risk is not easy and is highly dependent on the structure of the internal processes and internal controls. Therefore, it is essential to identification of internal processes and The risk drivers (Davari & Pahlevani Qomi, 2009, 15)

1-2. Significance of the study

The reasons for the increasing importance of operational risk in recent years can be the following factors:

□ Globalization of financial markets has added to the complexity of the institutions providing financial services, this also leads to increased need to the disclosure operational risk.

□ Integration in the financial services industry has created larger and more complex organizations which consequently have also increased the risk of non-compliance systems.

- Increasing dependence on computers and electronic communications in transaction banking and trading operations has increased the possibility of system failure.
- Investing in stocks of banks and interbank loans, potentially increasing the transmission of operational loss between banks and financial institutions.
- Growth of e-banking and e-commerce has caused financial institutions are faced with unknown risks.
- The occurrence of events such as Enron and World Com and similar events, due to illegal accounting operations, investors and legal authorities are focusing on transparency in financial reporting (Embrechts, 2006) (Akbari, 2012).

1.3 Research purposes

The main purpose of this research is identification of effective process factors on operational risk in Keshavarzi Bank branches in Zanjan city). These factors include. Internal processes of the bank (How services are offered to customers & Relationship system among the line and staff employees) and External factors of bank (Activities of abusive people from bank systems & Policies of domestic firms & Policies of abroad firms). In fact, this research attempts to control of operational risk in the Keshavarzi Bank branches in order to resources better manage and increase its profitability.

1.4. The research main hypothesis and sub-hypotheses

main hypothesis1:

-Internal processes of the bank are effective on operational risk management in Keshavarzi Bank.

Secondary hypotheses:

- How services are offered to customers is effective on operational risk management in Keshavarzi Bank.

Relationship system among the line and staff employees is effective on operational risk management in Keshavarzi

Bank.

main hypothesis2:

External factors of bank (that disturb bank operations) are effective on operational risk management in Keshavarzi

Bank.

Secondary hypotheses:

- Activities of abusive people from bank systems are effective on operational risk management in Keshavarzi Bank.

- Policies of domestic firms are effective on operational risk management in Keshavarzi Bank.

- Policies of abroad firms are effective on operational risk management in Keshavarzi Bank.

2. Theory and literature and Background of the Study

-The Definition of Operational Risk

What do we mean by operational risk? Operational risk management had been defined in the past as all risk that is not captured in market and credit risk management programs. Early operational risk programs, therefore, took the view that if it was not market risk, and it was not credit risk, then it must be operational risk. However, today a more concrete definition has been established, and the most commonly used of the definitions can be found in the International Convergence of Capital Measurement and Capital Standards: A Revised Framework regulations. These regulations are commonly known as "Basel II". The Basel II definition of operational risk is:

-the risk of loss resulting from inadequate or failed processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk (International Convergence of Capital Measurement and Capital Standards, 2006).

Risk taking is the inseparable part of any business. As Peter Drucker, the great scholar of management stated in the 1970's, economic activity is using the current resources for an uncertain future. The only thing that is certain about the future is uncertainty and risk. Historical studies by Drucker showed that achieving a better economic performance has always been accompanied by more uncertainty or in other words, higher risk-taking (Groups of studies and risk management the banks of Eghtesad Novin, 2008).

It should be said, Operational risk is defined as the risk of losses due to inadequacy or failure of internal controls, human errors, systems and external events. In other words there is the risk of failure and lack of efficiency in personnel and individual, technology and working process (Abolhassani and Hassani Moghaddam, 2008). The other risk areas are the following: internal and external fraud, which is done by the staff of banks and non-banks; inadvertent factors or negligence arising out of employees or lack of safety at work; which will cause loss of physical assets; Factors concerning of recipients of facility performance; external factors, such as legal restrictions, political, and natural factors (Niazi, 2005).

Current categories for key risk factors for insurers are insurance risk (e.g., underwriting, catastrophe, and reserve risk), market risk, and credit risk. Operational risk is also an important risk for insurers and should be addressed via a multi-pillar supervisory framework.

In international discussions on Basel II, academics and regulators have been critical of approaches to quantify operational risk capital for banking institutions that are based on expert scenarios and the probabilistic use of a tail value at risk (TVaR)-based measurement. Nevertheless, a granular focus on operational risk is increasingly evident in organizations. While some insurers are directing considerable efforts at quantifying operational risk, others are focusing primarily on the qualitative aspects of operational risk (e.g., looking into the processes that can lead to operational risk events) (Boller & et al, 2016).

Operational risk is closely linked to the risk culture of an insurer; thus, any attempt to quantify operational risk should be conducted in a very conscientious manner, making the limitations of the modelling approach transparent to the stakeholders. The focus for quantification should not be limited to the calculated results (i.e., the required capital) but also directed to:

- The processes and methodology followed to determine the required capital;
- The relevance and quality of the data used for modelling;
- The frequency with which the assumptions need updating; and
- The reliability of the derived value.

In addition, a quantitative approach to measuring operational risk should take into account the specific risk management processes directed at mitigating operational risks.

A further challenge with quantifying operational risk is related to the extensive use of expert judgment. In light of the challenges related to data, many organizations incorporate the use of experts to supplement historical operational risk loss events. Where used, expert judgment should be robustly applied, well documented, and supported by data wherever possible. One of the challenges cited in the literature is the absence of methods for combining expert opinion with relevant internal and external data (Boller & et al, 2016).

-Operational Risk Management and Operational Risk Measurement

There are two sides to operational risk: operational risk management and operational risk measurement. There is often tension between these two activities, as well as overlap. Basel II requires capital to be held for operational risk and offers several possible calculation methods for that capital, which will be discussed later in this chapter. This capital requirement is the heart of the operational risk measurement activities and requires quantitative approaches. In contrast, firms must also demonstrate that they are effectively managing their operational risk, and this requires qualitative approaches.

A successful operational risk program combines qualitative and quantitative approaches to ensure that operational risk is both appropriately measured and effectively managed. Operational risk measurement focuses on the calculation of capital for operational risk, and Basel II provides for three possible methods for calculating operational risk capital, which will be discussed later. Some firms choose to calculate operational risk capital, even if they are not subject to a regulatory requirement, as they wish to include the operational risk capital in their strategic planning and capital allocation for strategic and business reasons (Girling, 2014).

Operational risk is inherent in the banks activities and is an important element of enterprise wide risk management system. In the past few years, significant progress has been made in the area of implementing operational risk management framework and accordingly following main principles² for the sound management of operational risk have emerged. All banks are advised to follow these principles in their approach to operational risk management.

-The ultimate responsibility and accountability rests with the board of directors to ensure that a strong risk management culture exists throughout the organization. The board can delegate this responsibility to senior management with clear guidance and direction to inculcate a risk culture within the organization.

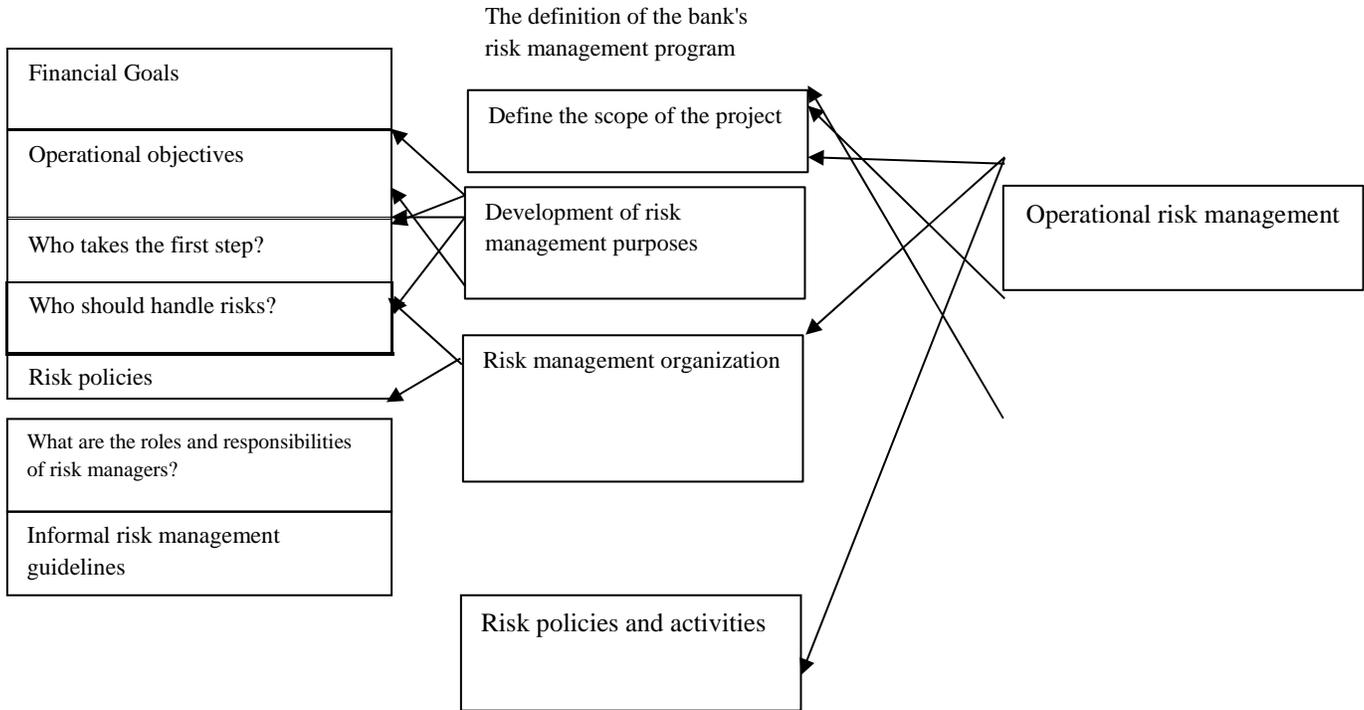
-The bank should develop, implement and maintain Operational Risk Management Framework which should be integrated into bank's overall risk management processes. The framework should be documented, duly approved by the board and at the minimum should:

- i. Define the terms "operational risk" and "operational loss".
- ii. Identify governance structure, reporting lines, responsibilities and accountabilities.
- iii. Describe various risk assessment tools and modus operandi on the effective use of these tools.
- iv. Describe the bank's accepted operational risk appetite and tolerance levels, and thresholds limits for inherent and residual risks with approved risk mitigation/ transfer strategies.
- v. Define bank's approach for establishing and monitoring thresholds/ exposure limits for inherent and residual risk exposure.
- vi. Describe risk reporting mechanism and appropriate hierarchy level at which the reporting would be escalated.
- vii. Provide common definition/ classification terminology to ensure consistency of risk identification, exposure ratings and risk management objectives.
- viii. Describe process of independent review and assessment of operational risk by Audit or independent qualified personnel.
- ix. Define process of updating the framework on an ongoing basis and whenever a material change in the operational risk profile of the bank occurs (Ashraf Khan & et al, 2014).

-Notable areas of project management, of operational risk

The development of operational risk management in an organization can be daunting. Operational risk analysis requires the support a large number of business areas, all of which have different tasks. In the figure 1. Below:

Figure1. Notable areas of project management, of operational risk (Sabaghiyan, 2011)



Exploring operational risk in Keshavarzi Bank

The topic of major activity of the bank based on contents of the articles of association of Keshavarzi Bank is as below:

1. Accepting all deposit types and employing them in credit transactions
2. Doing foreign exchange transactions and opening and announcing documentary credits
3. Participation or investment and buying and selling the securities
4. Maintaining and making brokerage relationship with banks and financial institutions in Iran and abroad and doing all banking services and operations in different economic sectors
5. Trust and trustee in accepting and holding the stock-securities and customers' properties
6. Service offering in agriculture sector (Bureau of Studies and risk management of Keshavarzi Bank, 2015).

Risk in Keshavarzi Bank

Any loss due to human and system errors, internal work practices and accidents outside a firm are recognized as operational risk. Evidences of this risk in Keshavarzi Bank are as follows:

- Human force: weakness and failure in the process of personnel selection and employment, weakness and inadequacy of theoretical and practical training, disproportionality of the posts in experimental, specialized, academic and competency terms
- Customers: inattention to customers' welfare possibilities, lack of quality and diversity in service offering to customers
- Systems: multiplicity of the issued circular letters and early changes in rules and instructions, error in software and computer programs, failure or impairment in the security system of branches
- Extra-organizational: natural events, armed robberies, directive rules (Mirzaee, 2012).

2-1 Background of the Study

-Girling (2014) in research of The required elements of an effective operational risk framework to meet the global regulatory requirements of Basel II, analyzes sources of operational risk data to determine the size of operational risk losses and the main drivers for those losses. IBM Algo FIRST subscription data and ORX consortium data sources are used for this analysis. The relative biases in subscription data and consortium data are discussed. In addition, a literature review

summarizes previous findings regarding the impact of operational risk and reputational risk events on share value. This review is supplemented by original analysis of the impact on share price and trading volumes as a result of the recent JP Morgan Whale operational risk event. The paper concludes with a recommended operational risk framework for the implementation of the important elements of an effective operational risk framework. These elements include the foundations of governance, risk appetite, culture and awareness, and policy and procedure; the building blocks of data collection including loss data, risk and control self-assessment, scenario analysis, and key risk indicators; and the final capstones of calculation of capital and reporting.

-Akbari (2012) in research of A Study on Factors Affecting Operational Electronic Banking Risks in Iran Banking Industry (Case Study: Kermanshah Melli Bank) mentioned nowadays, advances in information and communication technologies, has provided an opportunity for banks to provide their electronic services to their customers in remote areas. This technological innovation by E-banking systems has brought about many benefits to customers while it has been accompanied by a number of risks including the operational ones. This risks need to be identified and managed by the Banks. he identifies, compares, and ranks factors affecting operational E-banking risks in viewpoints of customers and employees of Kermanshah Melli bank. To this end, a questionnaire was distributed to 300 employees and 384 customers of Kermanshah Melli bank by applying random cluster data collection method. The study period covered the second half of the year of 2012. One-Sample T-Test, Friedman ranking Test and Independent Samples Test were employed to test hypotheses, to rank factors affecting operational risks and to compare the amount of effective factors on the operational risks of electronic banking among employees and customers Melli Bank respectively. The results indicate that hypotheses (1-5) support effects the factors (data accuracy, internal controls, technological infrastructure, access to systems, and security) have on Melli bank operational E-banking risks; hypothesis (6) ranks each of the 5-fold factors. In the security factors employees' opinion is more effective than customers, but in factors (Data accuracy, Technological infrastructures) the trend is reversed. The study also includes recommendations in order to manage and lower operational E-banking risks.

MollaZade (2010) studied the factors affecting on operational risk of electronic banking, in the Maskan Bank of East Azarbaijan, Kermanshah and Hamadan in Iran. The researcher found that all factors (data authentication, internal controls, technical infrastructure, access to system and security from the perspective of employees and customers) has an effect on the operational risk of Maskan Bank and the influence of these factors from employees perspective was more than the customer perspective. And the safety of staff and customers perspective has the greatest effect.

Galai and Mark (2001) conducted a study entitled risk management of ATM machines. According to the obtained results, factors such as stoppage and disturbance of systems in digital channels and unauthorized influences to information systems in e-banking are effective on operational risk of banks.

3. Research methodology

This study was conducted via descriptive-field method and has two classes of primary and secondary data. The required information about the research background aimed to Identification of effective process factors on operational risk in the bank branches in Zanjan city (years of 2010-2014), was collected through historical study and the hypotheses were evaluated using questionnaire which was prepared via interviewing with the experts and professors. The Likert four-option scale was used to measure the variables. Given that responses in this measurement scale are qualitative, thus the options including low, very low, moderate, high, very high were utilized to convert the qualitative data into quantitative data. Kolmogoroff-Smirnoff test was used in this study to test whether the variables are normal or not. Also, to mean distribution of data is used t-test to the hypothesis.

4- Research findings

In this study, was tried to help operational risk management in banking by identification of the process effective factors on operational risk in Keshavarzi Bank. For this reason, the factors which could be effective on operational risk in this bank were included in the hypotheses. They are adopted policies by bank management, internal processes of the bank, and external factors of the bank. Considering the above factors, the hypotheses were proposed and the required information was collected by means of questionnaire. Below, hypotheses and their results are presented.

Hypothesis 1- Internal processes of the bank are effective on operational risk management in Keshavarzi Bank. Given the research findings (Tables 1&3) and the statistical test (Table 2) this hypothesis is confirmed.

For example, in table 1, indimension of "Managers' policies in offering the facilities ", 1.8% of the low, 27.1% moderate, 36.4% of large and 33% have chosen is too high. The average and standard deviation of these components is 0.78& 3.92, which reflect the consensus of sample on the dimensions.

Since in table 2, the mean of this variable is obtained 3/57, amount of T is very large, ie 6/4, as well as the significant level equal to 0.0109 (significance level of less than 0.05%), It can be concluded that the null hypothesis is rejected. It means that the adopted policies by bank senior management are effective on operational risk management in Keshavarzi Bank.

It means that internal processes of the bank are effective on operational risk management in Keshavarzi Bank.

Considering the findings of tables 2 and 3, the secondary hypotheses are confirmed.

Table 1. Internal processes of the bank

Technique	Very	Low	Moderate	High	Very high	Mean	Standard
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	low						deviation
Manner of service offering to customers	1.7	1.8	27.1	36.4	33	3.95	0.90
Software and hardware systems	1.7	7.3	21	54	16	3.66	0.88
Relationship manner of line personnel with staff personnel	7.5	14.9	31	41.4	5.2	3.12	1.05

Table 2. T-test for internal processes of the bank

Mean	Value of statistic	Significance level	Result
3.57	6.4	0.0109	H0 rejection

Table 3. Results of the research hypotheses

The research hypotheses (main/secondary)	Mean	Standard deviation	Result
Internal processes of bank	3.57	0.94	It is accepted.
Service offering to customers	3.95	0.90	It is accepted.
Software and hardware systems	3.66	0.88	It is accepted.
Relationship manner of employees with the staff	3.12	1.05	It is accepted.
Environmental factors of bank	3.06	1.1	It is rejected.
Activities of profiteers (forgers, etc.)	2.83	1.1	It is rejected.
Policies of internal firms	3.43	0.9	It is rejected.
Policies of abroad firms	2.92	1.03	It is rejected.

Galai and Mark (2001) conducted a study entitled risk management of ATM machines. According to the obtained results, factors such as stoppage and disturbance of systems in digital channels and unauthorized influences to information systems in banking are effective on operational risk of banks. It can be stated that the result of this study is to some extent similar to the third hypothesis.

Note: for the sake of brevity in the next hypothesis are just table

Hypothesis 2- External factors of bank (that disturb bank operations) are effective on operational risk management in Keshavarzi Bank. Given the research findings (Tables 4 & 3) and the statistical test (Table 5) this hypothesis is rejected. It means that environmental factors of bank are effective on operational risk management in Keshavarzi Bank. Thus, the secondary hypotheses related to hypothesis 2 are rejected too.

Table 4. Items of the adopted policies

Technique	Very low	Low	Moderate	High	Very high	Mean	Standard deviation
Managers' policies in resource absorption sector	0	4.2	21.8	53	21	3.92	0.78
Managers' policies in granting facilities	0	5.9	21.2	42.90	30	3.88	0.89
Managers' policies in employees' motivation	0	6.02	16.98	40.01	36.9	4.06	0.86

Table 5. T-test for external factors of the bank

Mean	Value of statistic	Significance level	Result
3.06	0.58	0.105	H0 rejection

In a study entitled exploring the methods of risk measurement in the insurance industry and banking by Shahryar, it was shown that different factors have been effective on the existing fluctuations in financial markets (insurance, banking, etc) in recent years. Among these issues, great changes in emerging economies, the greater crisis in 1997-1998 in south-east of Asia, the earthquake in San Francisco, and tsunami in south-east of Asia can be stated.

5- Conclusions and suggestions

Findings indicates the manner of service offering to customers with a value of 3.95 have greatest impact on operational risk management and hardware and software systems with a value of 3.66 and manner of communication between the staff with

a value of 3.12 ranks next. Bank internal processes are effective on the bank's operational risk management. Also, the effect of environmental factors on the bank's operational risk management in the Keshavarzi bank rejected. So, the establishment of suitable internal controls, observance of circular letter by employees, assessment of employees' information, not involving personal interests of employees in banking affairs, and employees' update information are effective in operational risk management and better control of resources and its profitability.

Theoretical suggestions (for future research) are presented:

- It is suggested to conduct other studies about other factors which may be effective on operational risk in financial institutions.
- It is suggested to financial institutions and banks to pay more attention to the topic of operational risk; as a result, they will not face with the associated problems in joining to the international banking system.
- It is suggested to conduct a study to explore the effect of all types of risks of financial institutions, i.e. credit risk, liquidity risk, and operational risk on each other.
- It is suggested to perform studies about operational risk in other activities such as manufacturing industries, business institutions, etc.

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