

## **Financial and Non-Financial Risk Management in Banking Sector – An Overview**

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**Abstract:** Risk assessment and risk management was established as a scientific field three decades ago. Principles and methods of risks are developed for how to conceptualize, assess and manage risk. The application of proactive strategy to plan, leads, organize, and control the wide variety of risks that are rushed into the fabric of banks' daily and long-term functioning. The purpose of this paper is to attempt to classify the financial and non-financial risks and identify operational risk factors influencing faced by the banking sector. This paper also examined the different techniques adopted by banking sector and the strategy continued to improve its risk management system. To achieve the objectives of the study secondary sources have been collected from printed and on-line Books, journals, online publications and web information. Moreover, the study focuses on the process of risk management and risk management techniques which are adopted by the banks. Finally, study concluded that the banks should take risk more deliberately; anticipating adverse changes and, it becomes a source of competitive advantage, increase investors' confidence and efficient management of the banking industry.

**Keywords:** Credit risk, Financial Risk, Market risk, Non-Financial Risk, Operating risk, Risk Management, Value at Risk (VatR)

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### **I. INTRODUCTION**

The concept of risk and risk managements has an extensive history. More than 2400 years ago, the Athenians offered their capacity of assessing risk before making decisions by Bernstein (1996). The essence of managing risk is making good decisions in all fields. Correct decision-making depends on accurate information and proper analysis. Risk management became integral function in banking systems, whilst regulators intend to constitute discipline among financial institutions and discourage potentially negative consequences for banks worldwide. In a synthetic sense, risk is the variability of results under the pressure of factors from the environment in which the organisation operates. Risk can be regarded from the viewpoint of uncertain events that might affect the strategic, operational and financial objectives. Risk is a measure of the inconsistency between different possible results, obtained under more or less favourable or unfavourable conditions (Mihalcea and Androniceanu; 2000).

Risk is defined as anything that can create deterrents in the way of achievement of objectives. It can be either from within the business named as internal factors or from where the business has been operating such as external factors, depending upon the type of risk that exists within a particular situation. In the world of finance, risk management refers to the practice of identifying potential risks in advance, analyzing them and taking precautionary steps to curb the risk. When an entity makes an investment decision, it exposes itself to a number of financial risks. The quantum of such risks depends on the type of financial instrument. These financial risks might be in the form of high inflation, volatility in capital markets, recession, bankruptcy, etc. David B. Hertz (1979) says that "In a retrospective commentary, now routine use of risk analysis in business and government, emphasizing that the method can and should be used in any decision-requiring situations in our uncertain world".

Risk management in banks has changed substantially over the past decade. The regulations that emerged from the global financial crisis (2007) and the fines that were levied in its wake triggered a wave of change in risk functions. These included more detailed and demanding capital, leverage, liquidity, and funding

requirements, as well as higher standards for risk reporting. The management of non-financial risks became more important as the standards for compliance and conduct tightened. Stress testing emerged as a major supervisory tool, in parallel with the rise of expectations for bank risk-appetite statements. Banks also invested in strengthening their risk cultures and involved their boards more closely in key risk decisions. They also sought to further define and delineate their lines of defense. Given the magnitude of these and other shifts, most risk functions in banks are still in the midst of transformations that respond to these increased demands. Now a day, Board of directors have showed clearly in the financial statements about risk management of banks and how it managed in an effective and efficient way to the new investors.

Risk management is the identification, evaluation, and prioritization of risks (defined in ISO 31000 as the effect of uncertainty on objectives) followed by coordinated and economical application of resources to minimize, monitor, and control the probability or impact of unfortunate events or to maximize the realization of opportunities. Risks are from various sources including uncertainty in financial markets, threats from project failures (at any phase in design, development, production, or sustaining of life-cycles), legal liabilities, credit risk, accidents, natural causes and disasters, deliberate attack from an adversary, or events of uncertain or unpredictable root-cause. There are two types of events i.e. negative events can be classified as risks while positive events are classified as opportunities.

Peter F. Christoffersen (2011) says that the financial risk management is the practice of economic value in a bank by using financial instruments to manage exposure to risk: operational risk, credit risk and market risk, foreign exchange risk, shape risk, volatility risk, liquidity risk, inflation risk, business risk, legal risk, reputational risk, sector risk etc. Similar to general risk management, financial risk management requires identifying its sources, measuring it, and plans to address them.

According to Yang, Shirley Ouet.al (2017) The term operational risk management (ORM) is defined as a continual cyclic process which includes risk assessment, risk decision making, and implementation of risk controls, which results in acceptance, mitigation, or avoidance of risk. ORM is the oversight of operational risk, including the risk of loss resulting from inadequate or failed internal processes and systems; human factors; or external events. Unlike other type of risks (market risk, credit risk, etc.) operational risk had rarely been considered strategically significant by senior management.

IT Risk Management is the application of risk management methods to information technology in order to manage IT risk, i.e.: The business risk associated with the use, ownership, operation, involvement, influence and adoption of IT within an enterprise or organization. IT risk management can be considered a component of a wider enterprise risk management system. Hence, this review paper generally describes common risk which is faced by the bank and performance measures are frequently used by stakeholders and lenders to evaluate banks financial health and make risk management decisions.

## **II. REVIEW LITERATURE**

Obviously risk would come and affect immediately without any notices and in this way the business faces many unrecovered problems risk like Credit Crisis originated in London in the year 1772 and spread to the rest of Europe, the worst Financial and Economic disaster (Great depression from 1929-39), the OPEC oil price shock in 1973 affect to the member countries, the Asian Crisis of 1997 and originated in Thailand and quickly spread to the rest of East Asia and its trading partners, the Great Recession and the most-severe financial crisis since great depression, and it wreaked havoc in financial markets around the world in 2007-2008. The above mentioned risks would affect not only business operations but also reduce the investors' confidence.

For the present review, literature background collected from different research findings, conference conclusions and source from online. It is not common to find the terms exposure and risk being used interchangeable. However, as several authors have pointed out the two which are not identical. Exposure is a measure of the sensitivity of the value of a financial item (asset, liability or cash flow) to changes in the relevant risk factor while, risk is a measure of the variability of the value of the item attributable to the risk factor (Prakash,2002).

Thus the magnitude of risk is determined by the magnitude of exposure and the degree of variability in the relevant risk factor. Risk is the likelihood of losses resulting from events such as changes in market prices (Horcher, 2005). Risk arises as a result of exposure. The firm is exposed to uncertain changes in a number of variables in its environment.

Without the concept of risk a financial market would be very simple, easy and trust worthy but the complexity arises when it comes to risk. Along with diversification of functions, risk now become part and parcel inherited in every activity. According to Holton (2004) financial market become increasingly sophisticated in pricing, isolating, repackaging and transforming risks. Tools such as derivatives and securitization contribute to this process, but they pose their own risks. In addition, recent distress 2007 onward in financial firms makes risk the focus of attention.

Duttweiler (2009) argues that one of the main causes of liquidity risk is the mismatch of duration between asset and bank's liability, i.e., mobilizing and borrowing short-term funds while lending and granting credit at long-term duration. The imbalance between the maturity of assets and debt leads to the imbalance between the source and the use of capital, which is one of the reasons for the loss of liquidity.

The second source of liquidity risk arises from liabilities. Liquidity risk may occur whenever the bank has a mismatch between liabilities and assets, which forces banks to borrow more or sell assets to meet liquidity need. Due to the fire sale of property, its price may be lower than the actual value. Therefore, a number of properties will be converted into cash with lower value than its true value if they have enough time to sell by Duttweiler (2009).

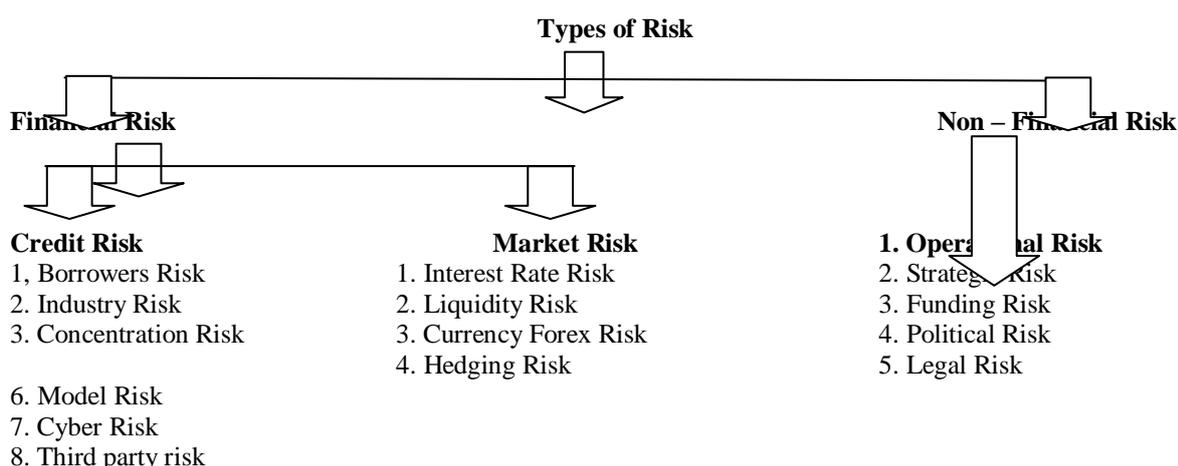
### Objectives of the Study

The present study has focused on the following general objectives.

1. To study about the commercial banks different type of risks.
2. To enumerate the risks factors influencing the commercial bank.
3. To identify the operational risk factors influencing the commercial bank
4. To examine the techniques adopted by banking industry for risk management and
5. To examine the proactive risk management strategies adopted by Bank for the improvement of the risk management.

## II TYPES OF RISK IN BANKING SECTOR

The risks that are faced by bank can be categorized into financial and non-financial risks. Both of these types of risks are very vital in order to safely run any business. In view of growing complexity of banking business and the dynamic operating environment, risk management, regulatory compliance at regional and global level, complex products, diversified operations, diverse workforce and multiple channel has become very important, especially in the financial sector. Risk at the apex level may be visualized as the probability of a bank's financial health being impaired due to one or more depending factors. While the parameters indicating the banks, health may vary from net interest margin to market value of equity, the factor which can cause the important are also numerous. For instance, these could be default in repayment of loans by borrowers, change in value of assets or disruption of operation due to reason like technological failure. While the first two factors may be classified as credit risk and market risk, generally banks have all risks excluding the credit risk and market risk as operational risk.



**FINANCIAL RISKS:** Financial risk is a type of risk associated with financial part which means the possible loss due to financial variables. Financial risks associated with the provision of banking services are risks related to the financial operation of a business, such as credit risk, liquidity risk, interest rate risk and currency risk. In financial risk Credit risk is extensively documented and familiar as the most significant and imperative in nature surrounded by loads of financial risk in front of banks (Sackett & Shaffer, 2006)

**a) Liquidity Risk** refers to the ability of a bank to access cash to meet funding obligations and which include allowing customers to take out their deposits. The inability to provide cash in a timely manner to customers can result in a snowball effect. If a bank delays providing cash for a few of their customer for a day, other depositors may rush to take out their deposits as they lose confidence in the bank. This further lowers the bank's ability to provide funds are leads to a bank run. The bank faces liquidity problems because of over-reliance on short-term sources of funds, having statement of financial position concentrated in liquid assets, loss of confidence in the bank on the part of customers and mismanagement of asset-liability duration. Normally, this would happen in

the bank due to bank have many short-term liabilities and not enough short-term assets because it tied up in the long-term loans or investments. The short-term liabilities are customer deposits or short-term guaranteed investment contracts (GICs) that the bank needs to pay out to customers. Avoid this liquidity problems bank regulation is important which means banks to hold enough liquid assets to survive for a period of time even without the inflow of outside funds.

Moreover, according to Santomero (1997), liquidity Risk can be described as the risk of a funding crisis, such as unexpected event in the form of large charge off, loss of confidence, or a crisis of national proportion like existence crisis. It is the potential for loss to an institution arising from either its inability to meet its obligations or to fund increases in assets as they fall due without incurring unacceptable cost or losses. This risk is one of the risks a bank faces.

**b) Credit Risk** is the principal risk which occurs when borrowers or counterparties fail to meet contractual obligations. This risk would appear in the bank due to borrowers' default of a principal or interest payment of a loan. Defaults can occur on mortgages, credit cards, and fixed income securities and failure to meet obligational contracts such as derivatives and guarantees. The escalating assortment in the kinds of counterparties i.e. from individuals to governments, and the always mounting diversity in the outlines of obligation i.e. from auto advances to multifaceted derivatives contacts, has supposed that management of credit risk has bound to the front position of risk management strategies carried out by financial services businesses (Fatemi & Fooladi, 2006). The supervision and regulation of credit risk is now trite in financial businesses, where upholding is essential to be done in order to lessen possible losses from non-payment on loans. To lower the credit risk exposure, bank lends money to people with good credit histories, transact with high-quality counterparties, or own collateral to back up the loans.

**c) Interest Rate Risk** arises from movements in interest rates. A bank is exposed to interest rate risk when it experiences a situation of imbalance in terms of size or maturity dates between assets and liabilities sensitive to interest rates, leading to potential losses for the bank when interest rate increases or declines and this influences the net asset value in the budget, which some call risk gap (Claudiu and Daniela, 2009). However, excessive interest rate risk can pose a significant threat to banks' earnings and capital base. Changes in interest rates affect banks' earnings by changing their net interest income and the level of other interest sensitive income and operating expenses. Companies face interest rate risks from the interest rate sensitivity of their debts and/or their investments. The impact of interest rates on the business will depend on the choice of funding: the mix between capital and debt; the mix between fixed and floating rate debt; and the mix between short-term and long-term debt.

**d) Currency Forex Risk** expresses how many units of one currency may be bought or sold for one unit of another currency. The spot rate is the exchange price for transactions for immediate delivery. The forward rate applies to a deal which is agreed upon now but where the actual exchange of currency is not due to take place until some future date. The exchange of currencies at the future date will be at the rate agreed upon now. According to Bessis (2002) foreign exchange risk as incurring losses due to changes in exchange rates. Such loss of earnings may occur due to a mismatch between the value of assets and that of capital and liabilities denominated in foreign currencies or a mismatch between foreign receivables and foreign payables that are expressed in domestic currency. Currency volatility is a major risk faced by companies doing business outside their home countries. There are a number of factors that influence a currency's exchange rate like; Speculation, Balance of payments, Government policy, Interest-rate differentials and Inflation rate differential

**e) Market Risk** is a risk which occurs from capital market activities due to commodity prices, interest rates, credit spreads and unpredictability of equity markets. To reduce this type of risk diversification of investment and hedging their investment with other is also important.

#### **Determinants of Financial Risk**

Financial risks are influenced by a numerous of factors and bank specific determinants of financial risk are unique to individual banks such as Return On Asset (ROA), Operational efficiency, growth rate of loan, size of the bank in terms of asset, capital and others. Moreover, financial risk of banks highly influenced by macroeconomic conditions, such as inflation rate, real GDP as a measure of economic growth, and lending interest rate. As pointed out in a number of literatures like Ali et al., (2011); Misman (2012); Fofack (2005) financial risk determinants can be classified 15 as bank specific (diversifiable or unsystematic risk) and macroeconomic (systematic risk) determinant of financial risk.

**II NON - FINANCIAL RISK:** Non- financial risk refers to those risks that may affect a bank's business growth, marketability of its product and services, likely failure of its strategies aimed at business growth etc. These risks may arise on account of management failures, competition, non- availability of suitable products/services, external factors etc. In these risk operational and strategic risk have a great need of consideration.

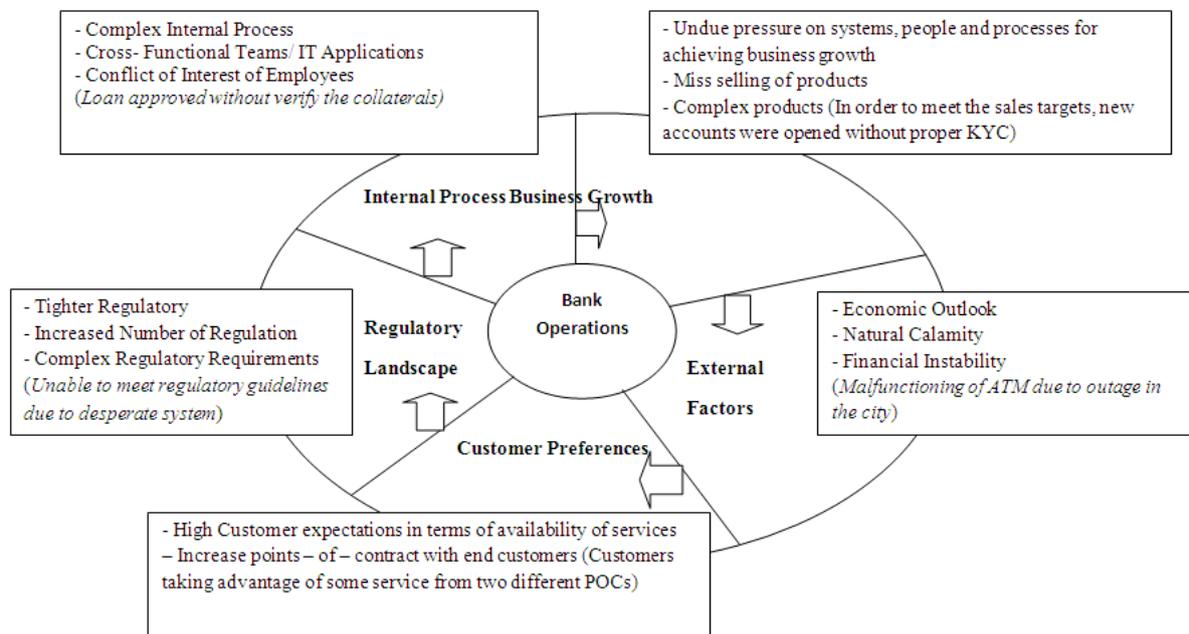
**a) Operational Risk** of loss would come due to human errors, interruptions, or damages caused by people, systems, or processes. Laviada (2007) stated that well-ordered structure of operational risk management will

underpin and reinforce organization’s internal controls. The study also emphasized to label internal audit for whole method of completion & execution for organizing operational risk. Human error includes internal fraud or mistakes during transactions. This operational type of risk of loss will increase to sales and trading and or decrease to retail banking and it depends on business operations. Power (2005) portrayed notice to the paradox and challenges of operational risk plan, as being part to broaden ‘enforced self-regulation’ into the operations of banking. In a large organization, fraud can occur through the breaching a bank’s cyber security because the hackers to steal customer information and money from the bank and black mail the institutions for additional money. Operational risk of a bank reduces loss capital; reduce customer confidence, damage reputation of the bank, difficult to attract deposits and meet going concern risk. Ray and Cashman (1999) reported that operational risk influence decision making in numerous ways, additionally risk assessment is considered necessary from both market participant perspective and system perspective.

Wiseman and Catanach (1997) stated that organizations need to assemble agency and prospect theories for modeling risk, and found them as both directly associated with choice of risk. Ray and Cashman (1999) reported that operational risk influence decision making in numerous ways, additionally risk assessment is considered necessary from both market participant perspective and system perspective.

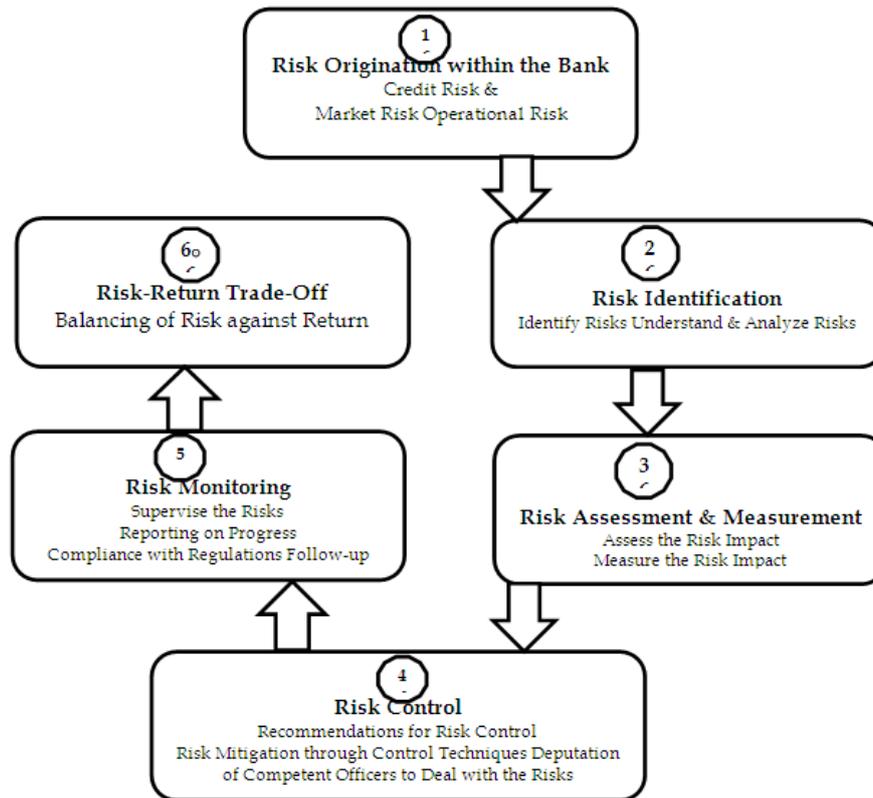
Power (2005) portrayed notice to the paradox and challenges of operational risk plan, as being part to broaden ‘enforced self-regulation’ into the operations of banking. The study established that Basel II banking regulations has successfully institutionalized the type of operational risk and pressure in three areas; i.e. data collection, definitional issues and extents of quantification, that represent the importance of operational risk. In addition, Flores, Ponte & Rodriguez (2006) emphasized on the use of information system (IS) and condensed capacity to take up new methods and policies for conniving and scheming operational risk.

### 1.4.2 Operational Risk Factors of commercial Banks



### III. PROCESS OF RISK MANAGEMENT

From the below diagram, we could able to identify the process of risk management functions. To overcome the risk and to make banking function well, there is a need to manage all kinds of risks associated with the banking. Risk management becomes one of the main functions of any banking services risk management consists of identifying the risk and controlling them, means keeping the risk at acceptable level. These levels differ from institution to institution and also from country to country. The basic objective of risk management is to stakeholders; value by maximising the profit and optimizing the capital funds for ensuring long term solvency of the banking organisation.



#### IV. TECHNIQUES OF RISK MANAGEMENT

##### a) GAP Analysis

It is an interest rate risk management tool based on the Statement of Financial Position which focuses on the potential variability of net-interest income over specific time intervals. In this method a maturity/ re-pricing schedule that distributes interest-sensitive assets, liabilities, and off-balance sheet positions into time bands according to their maturity (if fixed rate) or time remaining to their next re-pricing (if floating rate), is prepared. These schedules are then used to generate indicators of interest-rate sensitivity of both earnings and economic value to changing interest rates. After choosing the time intervals, assets and liabilities are grouped into these time buckets according to maturity (for fixed rates) or first possible re-pricing time (for flexible rate s). The assets and liabilities that can be re-priced are called rate sensitive assets (RSAs) and rate sensitive liabilities (RSLs) respectively. Interest sensitive gap (DGAP) reflects the differences between the volume of rate sensitive asset and the volume of rate sensitive liability and given by,  $GAP = RSAs - RSLs$

The information on GAP gives the management an idea about the effects on net-income due to changes in the interest rate. Positive GAP indicates that an increase in future interest rate would increase the net interest income as the change in interest income is greater than the change in interest expenses and vice versa. (Cumming and Beverly, 2001)

##### b) Duration-GAP Analysis

It is another measure of interest rate risk and managing net interest income derived by taking into consideration all individual cash inflows and outflows. Duration is value and time weighted measure of maturity of all cash flows and represents the average time needed to recover the invested funds. Duration analysis can be viewed as the elasticity of the market value of an instrument with respect to interest rate. Duration gap (DGAP) reflects the differences in the timing of asset and liability cash flows and given by,  $DGAP = DA - u DL$ . Where DA is the average duration of the assets, DL is the average duration of liabilities, and u is the liabilities/assets ratio. When interest rate increases by comparable amounts, the market value of assets decrease more than that of liabilities resulting in the decrease in the market value of equities and expected net-interest income and vice versa. (Cumming and Beverly, 2001)

##### c) Value at Risk (VaR)

Value-at-Risk (VaR) signifies standard measure for market risk measurement, often used by financial analysts worldwide. Value-at-Risk (VaR) is defined as the maximum potential change in the value of financial instruments portfolio for the given probability during observed horizon. In other words, VaR is the number

which show how much financial institution could lose during observed time horizon with the certain confidential level.

In the late 80's of XX century, JP Morgan developed widely used VaR system well known as Risk Metrics, which contained a few hundreds of risk factors, whilst matrix of covariance were updated based on historical data quarterly. This system replaced massive system of nominal market limits with simple VaR limits. During 1993 and 1995 were made amendments on Basel Accord from 1988, which predict changes in the field of market risk in terms of bank's obligation to accept standardized VaR approach, consistence with measure of 10 day VaR at the level of confidence of 95% or to apply internally developed VaR system. At the same time, with VaR approach development, there were present hard tons which emphasized critical aspect of approach in several senses: [1] Different implementation of VaR approach means inconsistency in results; [2] VaR concept, as risk measurement, is conceptually wrong and [3] Widespread of this method result in arising of systemic risk. Some of this questions were initiated by Harry Markowitz in 1952 (Markowitz, 1952), who pinpointed that if probabilities are subjective; there is no sense to talk about "updated VaR measure or about correlation matrix projection". From the subjective point of view, VaR measure or correlation matrix is the only objective expressions of subjective perceptions of users. Results of applied VaR models are multi applicable, especially in the field of risk management because they contribute to the assessment of performances risk-taken as well as evaluations that are necessary for fulfillment of regulatory requirements. The key point is providing of adequate and updated assessments. If risk is not properly assessed, it could result in sub-optimal allocation of capital, which will directly have consequences on profitability or financial stability of the bank. One of the shortcomings of VaR model is the fact that VaR does not give complete picture of exposure to market risk, so it is recommended to be used complementary with stress testing, which overcome mentioned shortcoming of VaR model.

## V. CONCLUSION

Risk assessment and risk management are established as a scientific field and provide important contributions in supporting decision-making in practice especially to the investor. This review paper has focused on recent research works and advances covering the fundamental ideas and concepts on which the risks fields are based. This study has successfully identified the factors that are significantly affecting financial and non-financial risk faced by the banks. The financial risk is measured with the credit worthiness of the banks and the non-financial risk is measure with the efficiency and effectiveness of banks' operational activities. Moreover, different types of operational risk factors are identified in the above review based on the study objectives. Review paper also focused with process and techniques of risk management system in the banking sector.

Based on the present review, the board of supervisors actively plays its role as supervisor and advisor particularly measures the risk and implements the good risk management to keep the risk level in stable in bank. Concentrating on the overarching issues and weak links affecting bank-wide operations and management, business development, risk management and internal control, the board of supervisors arranges special surveys of key topics and put forward supervisory opinions. It thus plays a positive role in preventing and mitigating potential risks, ensuring the bank's sound financial operation and promoting healthy business development. Moreover, the board of supervisors in a bank diligently should perform its supervisory duties of risk prevention and internal control. It follows up and studies the regional risks, industry-specific risks and policy risks confronting the bank, and deepens the supervision and assessment of internal control. By addressing emerging and tendentious problems as well as weak internal control in management, the board of supervisors intensified supervision and guidance and promoted early identification, warning and detection of risks in key fields as well as early action to address such risks.

### **Risk Management**

Dedicated to performing its duties as a global systemically important bank, the Bank actively responded to the new stage of high-quality development of economy and continued to improve its risk management system in line with its business model. The bank comprehensively followed local and overseas regulatory requirements, earnestly carried out risk inspection and pushed forward its compliance work of effective risk data aggregation and risk reporting, so as to ensure compliant operations. In addition, the banks improve its comprehensive risk management mechanism, strengthen the consolidated risk management and refined the risk assessment process for new products. It promotes the implementation of advanced capital management approaches, actively superior and updates its risk measurement model and increases the management coverage ratio of the internal ratings-based approach. The banks sped up the construction of its risk management information system, integrate its risk database, strengthen its risk data governance, improve its risk reporting capability and earnestly promote the application of big data and other technologies in risk management.

Moreover, the bank should maintain relatively stable asset quality by enhancing the supervision of risk analysis and asset quality control in key regions, and strengthening window guidance on all business lines. The

bank strengthens country risk management and incorporates it into comprehensive risk management system. It performs an annual review of country risk ratings and implements limit management of country risk exposures. It constantly optimise the country risk exposure statistical system to assess, monitor, analyse and report its exposures on a regular basis, thereby managing the use of limits in a precise manner. The Bank should also establish a country risk monitoring and reporting system covering yearly reporting, quarterly monitoring and the timely reporting of material risk events, which made it possible to regularly publish country risk analysis reports, provide updates on the country risk monitoring tables, make timely assessments of the impact of material country risk events and publish risk prompts. In addition, the bank differentiates the management of potentially high-risk and sensitive countries and regions.

Bank risk management will likely look dramatically different by 2025, when it has become a core part of banks' strategic planning, a close collaborator with business heads, and a center of excellence in analytics and de-biased decision making. Its ability to manage multiple risk types while preparing for new regulations and complying with current ones is expected to make it even more invaluable to financial institutions, and its role in creating fulfilling customer experiences will most probably transform it into a key contributor to banks' bottom lines. The risk function is also expected to become increasingly a differentiating factor among banks, helping to determine which ones succeed. However, the only risk functions that are likely to achieve this state are those undertake a wholesale, ambitious transformation and that start to do so now. For those that will do and a wealth of potential value awaits.

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