## Risk Management

### Types of Risk

<table>
<thead>
<tr>
<th>Strategic Risk</th>
<th>Compliance Risk</th>
<th>Operational Risk</th>
<th>Financial Risk</th>
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<td>A risk in which a company's strategy becomes less effective and it strives to achieve its goals. It could be due to: 1. technological changes, 2. a new competitor entering the market, 3. shifts in customer demand, 4. increases in the costs of raw materials.</td>
<td>Every business needs to comply with rules and regulations. For example with the advent of Companies Act 2013, and continuous updating of SEBI guidelines, each business organization has to comply with plethora of rules, regulations and guidelines. Noncompliance leads to penalties in the form of fine and imprisonment.</td>
<td>This type of risk relates to internal risk. It also relates to failure on the part of the company to cope with day to day operational problems. Operational risk includes 'people' as well as 'process'.</td>
<td>Financial Risk is referred to the unexpected changes in financial conditions such as prices, exchange rate, Credit rating, and interest rate etc. Also people who borrowed money and who are unable to pay back the borrowed money is a type of Financial Risk.</td>
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### Stakeholder's Angle

1. Equity shareholders view financial gearing i.e. ratio of debt in capital structure of company as risk since in event of winding up of a company they will be least prioritized.
2. Even for a lender, existing gearing is also a risk since company having high gearing faces more risk in default of payment of interest and principal repayment.
3. From company's point of view if a company borrows excessively or lend to someone who defaults, then it can be forced to go into financial liquidation.
4. Even this risk also includes willful defaults. This can also be extended to sovereign debt crisis.

### Government's Angle

1. From Government's point of view, the financial risk can be viewed as failure of any bank or life insurance which eventually would affect the balance sheet of the bank. Therefore, on the other hand, India on charges of financial irregularities and loan default related to his Kingfisher Airlines
2. Example: An employee paying Rs 1,00,000 from the account of the company instead of Rs 10,000. This is a risk as well as a process risk. An employee who can't check the work of that person who has mistakenly paid Rs. 1,00,000 or it can install an electronic system that will flag off an unusual amount.

### Company's Angle

1. Example: A new competitor entering the market, the market share gets divided among the new and existing players.

### Counterparty Risk

- This risk occurs due to non-honoring of obligations by the counterparty
- Example: In case of Nokia when it failed to upgrade its technology to develop touch screen mobile phones.

### Political Risk

- This type of risk is faced by and overseas investors, as the adverse action by the government of host country may lead to huge losses.
- Example: Foreign investors make huge investments due to political stability but later sees the country turning into a war zone.

### Interest Rate Risk

- This risk occurs due to change in interest rates resulting in change in asset and liabilities.
- Example: A company with Rs 100 crore debt at 10% rate of interest will see its interest cost increase to Rs 110 crore if the rates go up to 11%.

### Currency Risk

- This risk mainly affects the organization dealing with foreign exchange as their cash flows changes with the movement in the currency exchange rates.
- Example: A company with Rs 100 crore debt in USD at 10% rate of interest will see its interest cost increase to Rs 110 crore if the rates go up to 11%.

### Compliance Risk

- Every business needs to comply with rules and regulations. For example with the advent of Companies Act 2013, and continuous updating of SEBI guidelines, each business organization has to comply with plethora of rules, regulations and guidelines. Noncompliance leads to penalties in the form of fine and imprisonment.

### Operational Risk

- This type of risk relates to internal risk. It also relates to failure on the part of the company to cope with day to day operational problems. Operational risk includes 'people' as well as 'process'.

### Financial Risk

- Financial Risk is referred to the unexpected changes in financial conditions such as prices, exchange rate, Credit rating, and interest rate etc. Also people who borrowed money and who are unable to pay back the borrowed money is a type of Financial Risk.

### Evaluation

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### Risk Management

**Types**

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2. Compliance Risk
3. Operational Risk
4. Financial Risk

### VaR

**Meaning**

1. VaR is a measure of risk of investment given the normal market condition in a set of period, say one day. It estimates how much an investment might lose.
2. VaR answers two basic questions:
   1. What is worst case scenario?
   2. What will be lost?
3. VaR answers the question, “What is my worst-case scenario?” or “How much could I lose in a really bad month?”
4. For example, if a portfolio of stocks has a one-day 5% VaR of Rs. 1 million, that means that there is a 0.05% probability that the portfolio will fall in value by more than Rs.1 Million over a one-day period if there is no trading. Informally, a loss of Rs.1 Million or more on this portfolio is expected in 1 day out of 20 days (because of 5% probability). A loss which exceeds the VaR threshold is termed a “VaR breach.”
5. If a daily VaR is stated as Rs100,000 to a 95% level of confidence, this means that during the day there is only a 5% chance that the loss on the next day will exceed Rs. 100,000.
6. Assume London bank determines that its VaR is €3 million at 1% for one day. This statement means that the bank expects to lose a minimum of €3 million in one day 1% of the time. A critical, and often overlooked word, is “minimum.” In this example, the bank expects that its losses will be at least €3 million in one day with 1% probability. In a VaR measure, there is no ultimate maximum that one can state. VaR is thus a minimum extreme value metric. With a probability of 1% and a measurement period of one day, we can interpret the bank’s VaR as expecting a minimum loss of €3 million over every business day.

### Components of Calculations: VaR calculation is based on following 3 components

1. **Time Period**
2. **Confidence Level** – Generally 95%
3. **Loss in percentage or in amount**

### VaR Formula

\[
\text{VAR}_{t} = \text{SD}_{t} \times Z_{t} \times \text{Score}
\]

- \( \text{VAR}_{t} \) = Value at Risk
- \( \text{SD}_{t} \) = Standard Deviation
- \( Z_{t} \) = Z score which indicates how many standard deviations is away from Mean value of a population.
- When it is multiplied with Standard Deviation it provides VaR.

### Statistical Method

1. It is a type of statistical tool based on Standard Deviation.
2. **Control Risk**: Risk can be controlled by selling limits for maximum loss.
3. **Probability**: Assuming the values are normally distributed, probability of maximum loss can be predicted.

### Application

1. To measure the maximum possible loss on any portfolio or a trading position.
2. As a benchmark for performance measurement of any operation or trading.
3. To fix limits for individuals dealing in front office of a treasury department.
4. As a tool for Asset and Liability Management especially in banks.

### Formula

\[
\begin{align*}
\text{VAR}_{t} & = \text{SD}_{t} \times 1.65 \times 2 \text{ days} \\
\text{VAR}_{t} & = \text{SD}_{t} \times 1.65 \times 1 \text{ day}
\end{align*}
\]

Sometimes when you innovate, you make mistakes. It is best to admit them quickly, and get on with improving your other innovations. That’s been one of my mantras--focus and simplicity. Simple can be harder than complex; you have to work hard to get your thinking clean to make it simple. (‘Do not wait; the time will never be “just right.” Start where you stand, and work with whatever tools you may have at your command, and better tools will be found as you go along.)