The Convergence of Performance and Risk Management

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An opportunity exists to combine risk management and performance management to provide better decision-support

Executive Summary - Opportunity

Risk presents many dangers to companies, yet the discipline to formally measure, track and predict risk is generally underserved at most companies.

By converging Business Performance Management (BPM) practices and programs to risk, companies can better manage risk while improving their overall BPM programs.
Effective risk management in the planning, budgeting, reporting and forecasting processes requires a number of actions.

**Executive Summary - Execution**

- **Planning**: Enhance Strategic and Operational Planning
- **Budgeting**: Optimize Risk Budgeting (Benefits and Costs)
- **Forecasting**: Improve Forecasting Accuracy
- **Reporting**: Allow Monitoring, Reporting and Corrective Action
- **Increase Shareholder Value**

**Effective Risk Management in Planning Processes**
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Data suggest CFOs and Finance executives may have a ‘uncharted hazards’ when it comes to managing aspects of enterprise risk.

- Measuring risk is a low priority
- Unconventional risks are on the rise
- Current practices tend to focus on conventional risks
- Those who understand risk don’t implement well
- Risk is not included in planning

The data shows cause for concern among risk issues.
Therefore, finance organizations must extend their decision-making processes and measurements to help the enterprise better manage risk.

- Measuring risk is a low priority
- Unconventional risks are on the rise
- Current practices tend to focus on conventional risks
- Those who understand risk don’t implement well
- Risk is not included in planning

**Elevate the importance of risk**

**Expand the definition of risk**

**Formally address unconventional risks**

**Improve implementation of risk programs**

**Include risk in strategic and tactical planning**

**Action:**
Incorporate risk management into business performance management to formalize and improve risk management and overall performance.

**Develop a holistic view of past, present and future performance for decision-making**
As a result, there is an opportunity for convergence between performance and risk management

**Risk Management Needs**
- Formal and programmatic approach to managing risk
- Data and metrics-focused approach
- Historical, current-state, and forward-looking view
- Intelligent, informed decision criteria

**Business Performance Management (BPM) Strengths**
- Established and growing best practice within large companies
- Data and metrics-focused approach is central to BPM
- Provides views forward, backward, & across the organization
- Drives intelligent, informed business decisions

**Convergence =**  
Improved risk management and improved performance management
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- Appendix: Detailed Risk Definitions
As a starting point for integrating risk and performance management, we assume the following definitions and assumptions:

\[
\text{RISK} = (\text{Probability} \times \text{Consequence}) - \text{Resiliency}
\]

- Probability reflects the likelihood that an event will occur.
- Consequence reflects the extent to which the event will impair the organization from meeting one or more of its goals.
- Resiliency reflects the organization's ability to mitigate the impact. Resiliency is much more subjective and directional.

**Example:**
- A 20% chance that an event... will cause $1 million in losses...
- that the company can or can not afford.

- As a starting point, we assume that an organization has already created a risk strategy and has determined its risk appetite and risk tolerance.
- We also assume that organizations have identified the most apparent risks that impact them.

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1 We recognize that organizations may not have created an enterprise-wide risk strategy and may only have created a risk strategy for particular departments / functions. However, there is a trend on setting risk strategy.

Source: IBM Global Business Services
Companies should understand that risk comes in many varieties and occurs across the enterprise.

Types of Risks

- Strategic e.g., Competition
- Operational e.g., Supply Chain
- People/Organization e.g., Employee Retention
- Environmental e.g., Natural Disasters
- Financial e.g., Foreign Exchange
- Health and Safety e.g., Accidents
- Political / Economic e.g., Instability in Foreign Markets
- Compliance e.g., Sarbanes-Oxley

Source: www.businesslink.gov.uk ("Managing Risk", guide developed by Institute for Risk Management, Cranfield School of Management, Airmic), IBM Global Business Services
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Effective risk management in planning processes requires a number of actions

Key Recommendations to Integrate Risk into Planning Processes

- Consider traditional & non-traditional risks and prioritize based on value drivers
- Correlate independent risks
- Factor in the compounding effect of risks
- Conduct risk scenario planning

- Create a rolling forecast of risks
- Incorporate the impact of upside and downside risk(s) on rolling operating forecasts

- Adapt budgets to reflect risk-adjusted planning and factor in risk mitigation costs
- When incorporating risks, balance between central and local / unit level responsibility

- Enhance reporting to move up the maturity model of risk reporting
- Include key risk indicators, key failure modes & algorithms / rules for tracking risks
- Drive preventive and corrective actions

Source: IBM Global Business Services
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Organizations need to incorporate risk into strategic and operational planning to build in resiliency

Risk-adjusted Planning

- **Traditional & non-traditional risks**: Organizations need to consider traditional and non-traditional risks and prioritize those risks against its value drivers.

- **Prioritize risks**: Organizations need to overlay high-priority risks into the strategy map.

- **Risk correlation**: Organizations need to understand the correlation of risks (e.g., because of risk "A", there is an increased risk in "B" and a decreased risk of "C")

- **Compounding effects of risk**: Organizations need to identify and understand the compounding effects of risk interactions.

- **Scenario planning**: Organizations need to proactively mitigate the potential occurrence or consequences of risks through scenario planning.

Source: IBM Global Business Services
Organizations need to identify and prioritize potential risk events based on the material impact to key value drivers.

Tying Potential Risk Events to Value Drivers

**H/H** = High Probability, High Consequence

**Risk Events**
- Maintenance/reliability
- Rising fuel prices
- Union disagreements
- Workforce shortage
- Reservation system failure
- Currency/foreign exchange fluctuations
- Computer crime

**Airline Example**

Purchased Services
- Direct Materials
- Credit Card Fees
- Ground Rentals

Commissions
- % Flight Crew
- % Cabin Crew
- % Maintenance
- % Fuel/Passenger Handling
- % Cab-in-Cabin Crew

Information Technology
- Reservations
- Revenue Accounting
- ERP / Back Office
- Other

Landing & Navigation Fees
- % Domestic vs International Flights
- Number of Departures

Maintenance
- Functional Distribution of Personnel
- Number of Aircraft Types
- Number of Aircraft
- Average Age of Fleet

Sales & Marketing
- Number of Brand Accounts
- Number of Management Personnel
- % Direct Versus Indirect Bookings

Labor, Salaries & Benefits
- Number of Contract Personnel
- % of Unionized Workforce
- % of Management Personnel
- % of Unionized Personnel

2. Operating Margin

Fuel Expense
- Fuel Efficiency
- Effective Fuel Price
- Fuel Mix
- Average Stage Length
- Fuel Cost / Gallon
- % Hedging Contracts

Weighting = Driver’s probable Impact on Value perception of Consequence

Source: IBM Global Business Services
Organizations need to identify/understand compounding effects of risk interactions ("snowball" effect)

Case Example - Compounding risk interactions for major pet food manufacturer

Due to weaker results, goodwill (for accounting purposes) was found to no longer have economic value and was therefore written off. This in turn affected the balance sheet and caused certain debt covenants to be violated. The violation of debt covenants required that dividends (in this case, distributions from the income trust, the legal structure of the company) be suspended.

The combined effect of these risks led to a major decline in share/unit price, which in turn put at risk many of the organization’s employee incentive programs (i.e. value of options), thus furthering the risk spiral.

Source: Company Public Filings, Company Interview, IBM Global Business Services
Organizations need to identify/understand compounding effects of risk interactions

Case Example - Compounding Risk Interactions

**Addressing Risks Individually**
Most organizations could – and perhaps would – have considered the risk implications of any of these risks individually.

- **Foreign Exchange Risk**: Manage through formal hedging programs and/or matching of some expenses against revenue flows.
- **BSE / Mad Cow Disease**: Identify multiple sources, especially locations and countries of origin (one of the major challenges of BSE was the full or partial closing of the U.S. borders to/from Canada and Mexico).

**Results**: Drove the spiral further downward, as it caused the goodwill to be impaired which led to write-offs and the violation of debt covenants.

**Addressing Risks Combined**
Very few firms considered the compounded effect of two major economic risks (currency & BSE) and the possible effect on results & thus, share price.

- **Foreign Exchange Risk**
- **BSE / Mad Cow Disease**

Established financing structures that would account for simultaneous changes in both foreign money and physical good (e.g., beef products) supply.

**Results**: Avoid downstream, compounded risks and preserve share price.

Source: Company Public Filings, Company Interview, IBM Global Business Services
While FedEx has planned for the impact of weather risks on their operations, what is the role of Finance and BPM tools?

### Case Example - Risk Scenario Planning

#### Role of risk-adjusted BPM

**Opportunity:** Use performance management tools to help the front line manager with the cost-benefit analysis between the risk event and the corrective actions.

#### Corrective Actions

- **Ground Transportation**
  - Send trucks in to haul packages to another airport

- **Extra planes**
  - Use one of the two planes that FedEx flies empty into Memphis each night from Denver and Salt Lake City for emergencies

- **Contingent capacity**
  - Send in one of the 40 or so planes that are deliberately sent out half empty so they can be diverted to other airports to pick up loads

- **Reserved spares**
  - Pull in one of the “static spares”: planes that are officially retired from service but similar enough to the working fleet to be used in extreme emergencies

Due to weather and volumes, FedEx needs an alternative way to support tomorrow’s guaranteed delivery.

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Organizations need to move beyond risk-free base cases

Risk-adjusted Budgeting

Organizations need to adapt their budgets to reflect risk-adjusted planning

- For each potential risk event, organizations need to identify probability, consequence and resiliency
- Organizations need to determine impact of risks that cannot be addressed (e.g., catastrophic events, known unknowns, unknown unknowns, and degree of confidence)
- Organizations need to identify risk mitigation strategies’ cost and performance implications to optimize the balance between cost and control

Central vs. local

Through budgeting, there is a balance between central and local / unit level responsibility when incorporating risks

Risk-adjusted cases can yield greater value

Source: IBM Global Business Services
Risk-adjusted planning output can now inform the budgeting process

**Risk-adjusted Planning Output**

Strategic objectives and measures adjusted for:
- Potential new risks based on addressing old risks
- Activities to prevent risk events or address impacts of risk events
- High priority risks based on value drivers

**Risk-adjusted Budgeting Implications**

- Determine the impact of downside and upside risk events
- Build in cost for risk mitigation strategies

Source: IBM Global Business Services
Organizations need to create budgets with knowledge of risk

Creating Budgets With Knowledge of Risk

1. Operating or project budgets should first be developed on a risk-free basis

2. As risks are identified, the probabilities, consequences, and resiliency capabilities of each risk are evaluated

3. These are then updated to reflect mitigation plans / actions

All are regularly updated to reflect improved knowledge over time

Source: IBM Global Business Services
Incorporating risks into budgets means consideration of probability, consequence and resiliency.

Illustrative of Creating Budgets With Knowledge of Risk

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Likelihood</th>
<th>Adjusted Consequence</th>
<th>Adjusted Likelihood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very minimal</td>
<td>$0</td>
<td>Very minimal</td>
<td>$0</td>
</tr>
<tr>
<td>Minimal</td>
<td>$15</td>
<td>Minimal</td>
<td>$5</td>
</tr>
<tr>
<td>Moderate</td>
<td>$30</td>
<td>Moderate</td>
<td>$25</td>
</tr>
<tr>
<td>Substantial</td>
<td>$60</td>
<td>Substantial</td>
<td>$50</td>
</tr>
<tr>
<td>Very substantial</td>
<td>$100</td>
<td>Very substantial</td>
<td>$80</td>
</tr>
</tbody>
</table>

1 If the consequence is ‘fixed’ upon occurrence, i.e. if the event occurs the consequence is known, then steps 2 and 3 can be skipped; in other words, if the event happens, the consequence is known to be $X. The only management action that can be taken is to prevent occurrence.

Source: IBM Global Business Services

Excludes any ‘what can go wrong events’ and any related mitigation actions and costs / benefits
Excludes resiliency actions beyond those already embedded in the plan (e.g., benefits of cross-trained staff)

Continue to update all parameters over time, as knowledge of probability, consequence, and mitigation or resiliency efforts become better known.
Risk-adjusted cases can yield greater value

Risk-adjusted Cases

Downside Risks
- Supply Chain Disruption
- Work Stoppage

Upside Risks
- Raw Material Pricing
- Competitor Failure

Mitigation Efforts
- Cost of Mitigation Actions
- Impact of Mitigation Actions

Risk-Free Budget

Risk-Adjusted Budget

Source: IBM Global Business Services
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  **Risk-adjusted Reporting**

    Risk-adjusted Forecasting

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To take preventive and corrective actions and mitigate risks, organizations need to monitor and report risk

Risk-adjusted Reporting

Organizations should enhance their reporting to move up the maturity model of risk reporting
- Levels 1 and 2 of risk reporting focus on flagging algorithms / rules to help serve as ‘headlights’ and help to illustrate potential risks
- In Level 3, metrics reporting tools that reflect the flow of business processes and which integrate predictive analytics help to provide a useful ‘headlights’ perspective
- Level 4 incorporates a cause-and-effect diagram into a metrics reporting tool to further enhance the ability to anticipate potential issues and focus corrective actions
- In Level 5, organizations move to predictive trend analysis through consistently building, verifying, and refining causal models which include Key Risk Indicators

Update dashboard
Organizations should enhance their reporting framework / dashboard to include key risk indicators, key failure modes and algorithms / rules for tracking risks

Preventative and corrective actions
Organizational reporting should promote the identification, initiation and monitoring of preventive and corrective actions

Source: IBM Global Business Services
Risk-adjusted budgeting output can now inform the reporting process

Risk-adjusted Budgeting Output

Budgeting Output
Budget targets adjusted for downside and upside risk mitigation budget allocations

Risk-adjusted Reporting
- Determine level reporting maturity for prioritized risk events
- Enhance reporting to track KRIs and mitigation plans

Source: IBM Global Business Services
Organizations should enhance their reporting framework/dashboard to supplement KPIs with key risk indicators (KRIs)

**Key Risk Indicators**

- Highlight **current risk levels** by providing a measure of the status of an identified risk and the effectiveness of its control.
- Highlight **trends and changes in risk level** by monitoring changes in risk on an on-going basis.
- Provide **early warning signals** through predictive risk indicators which highlight changes in the risk environment, control effectiveness and potential risk issues, before they crystallize and result in loss or other exposure.
- Enable **actions that prevent or minimize material loss or incident** by prompting timely action on early warning signals.
- Express **escalation criteria for risk management** by using thresholds to convert raw indicator data into meaningful risk ratings to aid effective decision making.

Source: Adapted from Lloyd's of London (Risk Management Toolkit)
Organizations should enhance their reporting to move up the maturity model of risk reporting

### Risk Reporting Maturity Model

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Leading</td>
</tr>
<tr>
<td>Level 2</td>
<td>Optimizing</td>
</tr>
<tr>
<td>Level 3</td>
<td>Parity</td>
</tr>
<tr>
<td>Level 4</td>
<td>Developing</td>
</tr>
<tr>
<td>Level 5</td>
<td>Trailing</td>
</tr>
</tbody>
</table>

- **Level 5 (Leading):** Statistically driven causal models for trend analysis
- **Level 4 (Optimizing):** Cross-process cause-and-effect representation of linkages
- **Level 3 (Parity):** Representation of a single process ‘pipeline’
- **Level 2 (Developing):** Statistical analysis of risk, identification of key failure modes
- **Level 1 (Trailing):** Directional performance trending

Practitioners should understand that it is not always cost effective to achieve the highest level of maturity model.

Source: IBM Global Business Services
With potential risk events prioritized, mitigation strategies can be devised.

**Tying Potential Risk Events to Value Drivers**

- **Risk Events**
  - Maintenance/reliability
  - Rising fuel prices
  - Union disagreements
  - Workforce shortage
  - Reservation system failure
  - Currency/foreign exchange fluctuations
  - Computer crime

- **Mitigation Strategies**
  - Spares sharing
  - Fuel hedging
  - Mandatory arbitration
  - Cross training
  - Redundancies
  - Currency hedging
  - Fraud detection process

**Weighting** = Driver’s probable Impact on **Value** perception of **Consequence**

**H/H** = High Probability, High Consequence
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Organizations need to link rolling forecast of risks and rolling operating forecasts

**Risk-adjusted Forecasting**

<table>
<thead>
<tr>
<th>Rolling risk forecast</th>
<th>Organizations need to create a rolling forecast of risks for those risks whose probability, consequence and resiliency change over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upside and downside risks</td>
<td>Organizations should incorporate the impact of upside and downside risk(s) on their rolling operating forecasts</td>
</tr>
<tr>
<td>Link risk &amp; operating forecasts</td>
<td>Over time, linking rolling forecasts of risks to rolling operating forecasts would shift from &quot;gut&quot; feel or heuristics to using predictive analytics to make correlations and further improve the accuracy of forecasts</td>
</tr>
<tr>
<td>Minimize surprises with forecasts</td>
<td>By minimizing surprises with forecasts, organizations will be rewarded by the Street</td>
</tr>
</tbody>
</table>

Source: IBM Global Business Services
Risk-adjusted reporting output can now inform the forecasting process

**Risk-adjusted Reporting Output**

- **Forecasting**
  - Create rolling forecast of "changing" risks over time
  - Revise rolling operating forecasts with impact of upside and downside risks

- **Reporting Output**
  - Financial and non-financial performance adjusted for:
    - Trending reports on prioritized risk events
    - Impact levels of risk events
    - Effectiveness of preventive and corrective actions (if necessary, as required)

Source: IBM Global Business Services
Only a subset of risks requires a rolling forecast

**Risks Requiring a Rolling Forecast…**

### Compilation of Risks
- Corporate risks
- Geographic risks
- Business Unit risks
- Initiative / project risks

### Risks Not Requiring Forecast
- Risks with probabilities, consequences and mitigation strategies that do not change over time

### Risks Requiring Rolling Forecast
1. Risks that need probabilities, consequences and/or resiliency to be adjusted
2. Risks with fixed dates (e.g., election) or a timeframe (e.g., hurricanes in September) have changing confidence levels

Source: IBM Global Business Services
The passage of time changes an organization’s view of risk events and affects the certainty, or level of confidence in an organization’s estimates

Risks Requiring a Rolling Forecast…2

1. Risks that need probabilities, consequences and/or resiliency to be adjusted
   - Potential events pass and will not occur, such as a strike or lockout prevented by a labor agreement being reached
   - Highly effective mitigation plans being put into effect, such as physical barriers being erected (flood control, security, etc.) or agreements being reached with alternate suppliers of goods / services
   - Resiliency strategies being tested and available for deployment, such as cross-training of workers or the capability to redeploy goods and employees to affected areas in case of natural disaster

2. Risks with fixed dates or a timeframe have changing confidence levels
   - A change in the level of confidence should be reflected by narrowing (or widening) the range of a forecast

Source: IBM Global Business Services
Risk-adjusted forecasting output can now inform the planning process

Risk-adjusted Forecasting Output

Planning
Revisit risk adjust value drivers
Revise risk mitigation planning

Forecasting Output
Driver-based rolling forecasts adjusted to model future performance incorporating revised knowledge of risk

Source: IBM Global Business Services
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The sequencing of actions will vary based on existing initiatives

Where to Begin

Developing risk management strategy

- Not started
  - Begin with a top-down approach

- Started
  - Start with planning

Integrating risk in performance management

- Not started
  - Continue the effort in any of the four areas of planning, budgeting, reporting and forecasting

- Started

Source: IBM Global Business Services
The top-down approach begins with strategy and cascades risk management down.

**Recommended Top-Down Approach**

**A. Develop risk management/BPM convergence strategy**
- A1. Develop and document corporate strategy and key goals
- A2. Identify risks specific to and currently facing the organization
- A3. Drive agreement on risk strategy

**B. Tactical risk planning**
- B1. Map risks to organizational goals via value drivers
- B2. Determine corrective actions for each risk
- B3. Create/update risk plans, budgets and forecasts

**C. BPM/risk integration and implementation**
- C1. Determine operational vision and requirements to implement risk program
- C2. Develop blueprint and roadmap for risk/BPM implementation
- C3. Continue to monitor all elements of risk over time

Source: IBM Global Business Services
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Components of probability: Each risk is linked to probability

\[
\text{RISK} = (\text{Probability} \times \text{Consequence}) - \text{Resiliency}
\]

<table>
<thead>
<tr>
<th>Intrinsic likelihood</th>
<th>Actions</th>
<th>Adjusted likelihood</th>
<th>Knowledge over time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic likelihood of an event occurring, particularly an event the occurrence of which cannot be controlled or influenced in a reasonable time frame(^1)</td>
<td>The actions an organization might take to reduce the likelihood that an event occurs</td>
<td>Adjusted likelihood that an event occurs, after execution of any actions to reduce that likelihood</td>
<td>Knowledge over time, with the level of knowledge or certainty generally increasing over time and/or as a given date approaches</td>
</tr>
</tbody>
</table>

\(^1\) One example is a natural event, such as tornado, hurricane, flooding, etc. Some might argue that human behavior contributes to the occurrence of such events, but for the most part, no planner can affect the likelihood that such an event occurs in the time period he or she faces.

Source: IBM Global Business Services
Components of consequence: Each risk is linked to consequence

Risk = \[(Probability \times Consequence) - Resiliency\]

<table>
<thead>
<tr>
<th>Intrinsic severity</th>
<th>Actions</th>
<th>Adjusted consequence</th>
<th>Knowledge over time</th>
<th>Independent of probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrinsic severity of the event, which may or may not be controlled or influenced in a reasonable time frame(^1)</td>
<td>The actions or steps an organization might take to reduce the impact of an event if it were to occur</td>
<td>Adjusted consequence or impact of the event, if it occurs, after execution of any actions to change that consequence</td>
<td>Knowledge over time, with the level of knowledge or certainty generally increasing over time and/or as a given date approaches</td>
<td>Independent of probability, i.e. however low or high the probability might be, the consequence is a given once the event occurs</td>
</tr>
</tbody>
</table>

\(^1\) One example is a natural event, such as tornado, hurricane, flooding, etc., where the element of severity is generally accepted as not controllable in the time frames we work in. In other situations, such as work stoppages or industrial accidents, organizations can and should aggressively manage both intrinsic likelihood and intrinsic severity; for example, a firm might expend substantial effort to prevent death and serious injury from occurring in the workplace, but accept bruises and sprains due to the nature of the work.

Source: IBM Global Business Services
Components of resiliency: Each risk is linked to resiliency

\[
\text{RISK} = (\text{Probability} \times \text{Consequence}) - \text{Resiliency}
\]

<table>
<thead>
<tr>
<th>Inherent ability of an organization to recover</th>
<th>Increased through specific actions</th>
<th>Tolerance &amp; consequence mitigation</th>
<th>Speed of response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inherent ability of an organization to recover from a risk event, in other words to ‘return to normal’</td>
<td>Increased through specific actions, such as additional cross-training of staff, pre-positioning assets in locations to better respond to events, contracting with alternative suppliers, etc.</td>
<td>Greater resiliency might allow more tolerance for risk as well as the ability to mitigate consequences</td>
<td>Resiliency allows an organization to respond quicker to an adversity as well as to respond faster relative to competition, ultimately reducing the impact of a risk event</td>
</tr>
</tbody>
</table>

Resiliency is usually a positive number, meaning that an organization has the capability to bounce back and recoup some of its losses. But in rare cases, resiliency can be zero or even negative, meaning that an organization is so rigid and unable to adapt or change that it worsens its circumstances (‘deer in the headlights’)

Source: IBM Global Business Services
**Definition of Risk Appetite and Risk Tolerance**

The amount / extent of risk that an organization is willing to accept in pursuit of a desired return, (i) prior to taking any probability reduction or consequence mitigation actions, and (ii) after taking such actions and reflecting the effort / expense of those actions.

**Risk Appetite**

Tolerance is different levels / amounts of risk, starting with a risk level / impact at which they take no action, escalating through greater risks with specific actions, and finally reaching some limit at which point the organization is unwilling to accept the risk and takes what usually amounts to drastic action.

**Risk Appetite Example:**
- A manufacturer uses overseas facilities. While much cheaper, labor and infrastructure are much more difficult to control.
- Due to this, the manufacturer faces a disruption in the supply of a key component.

**Risk Tolerance Example:**
- If estimated work stoppage will be brief, then normal inventories might be sufficient and no action is required.
- If estimated disruption will last for a moderate period of time, then an inventory buildup is likely warranted along with the identification of alternate suppliers.
- If estimated disruption is lengthy, then the firm might contract immediately with alternative suppliers, re-design its product to accommodate new components, emphasize other products in its sales efforts, etc.

Source: IBM Global Business Services
THANK YOU!

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