Global Business Services

The Convergence of Performance and Risk Management

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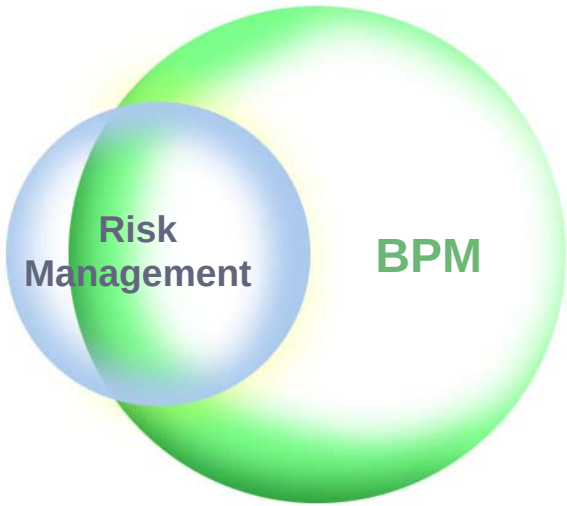
An opportunity exists to combine risk management and performance management to provide better decision-support

Executive Summary - Opportunity

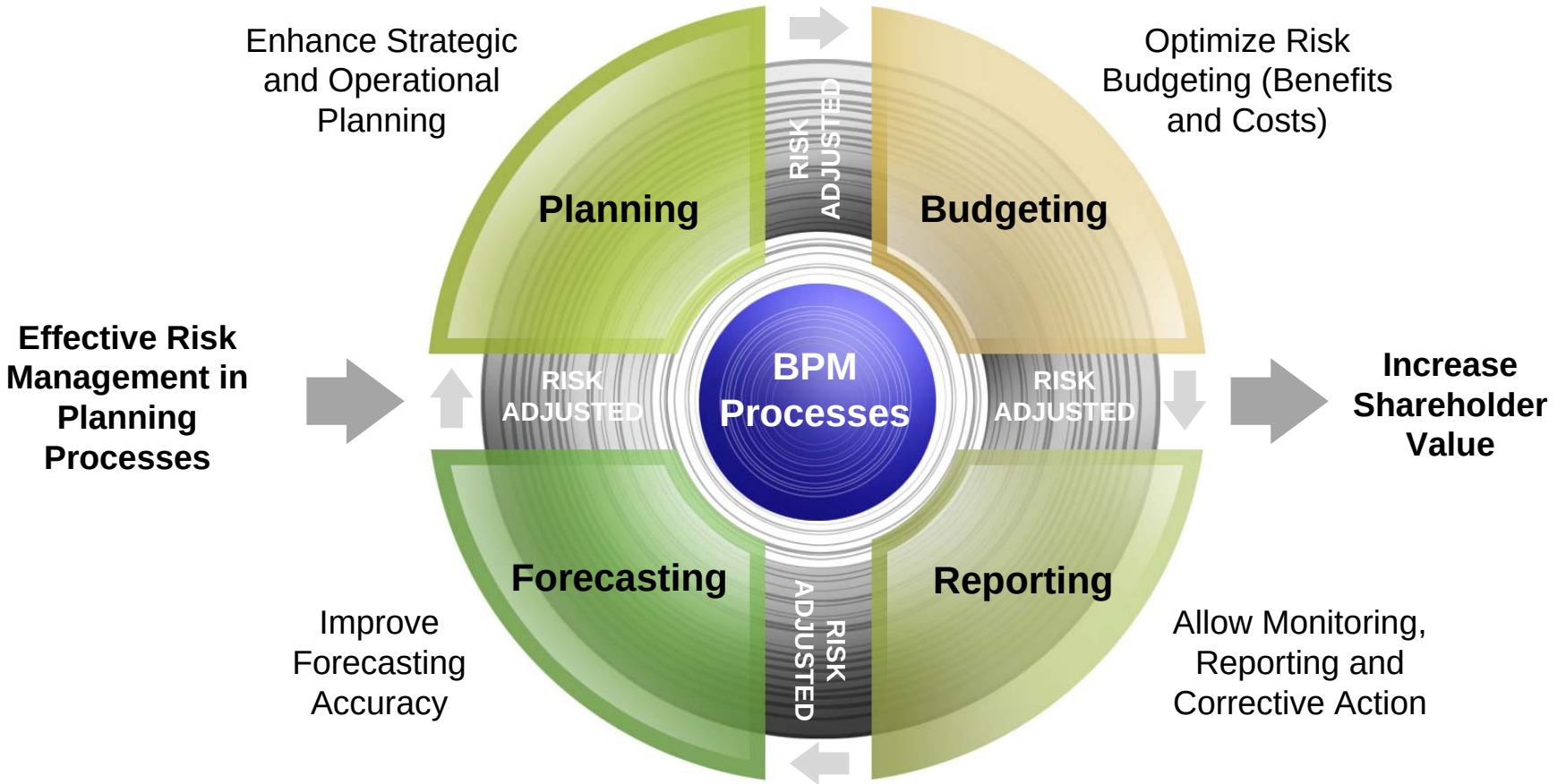


Risk presents many dangers to companies, yet the discipline to formally measure, track and predict risk is generally underserved at most companies

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

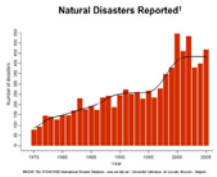


Contents

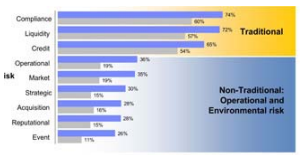
Data suggest CFOs and Finance executives may have a 'uncharted hazards' when it comes to managing aspects of enterprise risk

Measuring risk is a low priority

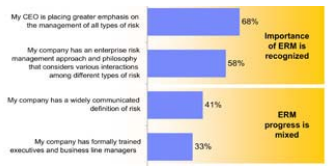
Unconventional risks are on the rise



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	Elevate the importance of risk
Unconventional risks are on the rise	Expand the definition of risk
Current practices tend to focus on conventional risks	Formally address unconventional risks
Those who understand risk don't implement well	Improve implementation of risk programs
Risk is not included in planning	Include risk in strategic and tactical planning

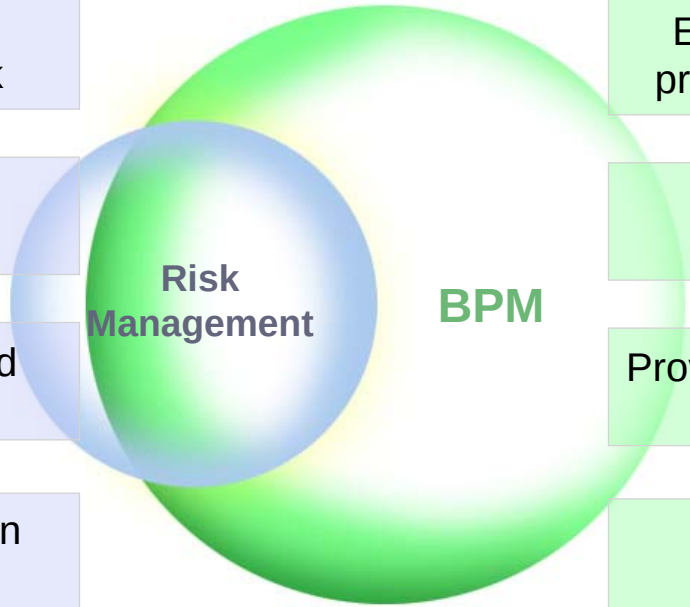
Action:
Incorporate risk management into **business performance management** to formalize and improve risk management and overall performance

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

Contents

As a starting point for integrating risk and performance management, we assume the following definitions and assumptions

RISK =

(PROBABILITY x CONSEQUENCE) - 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[1]
- We also assume that organizations have identified the most apparent risks that impact them

[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

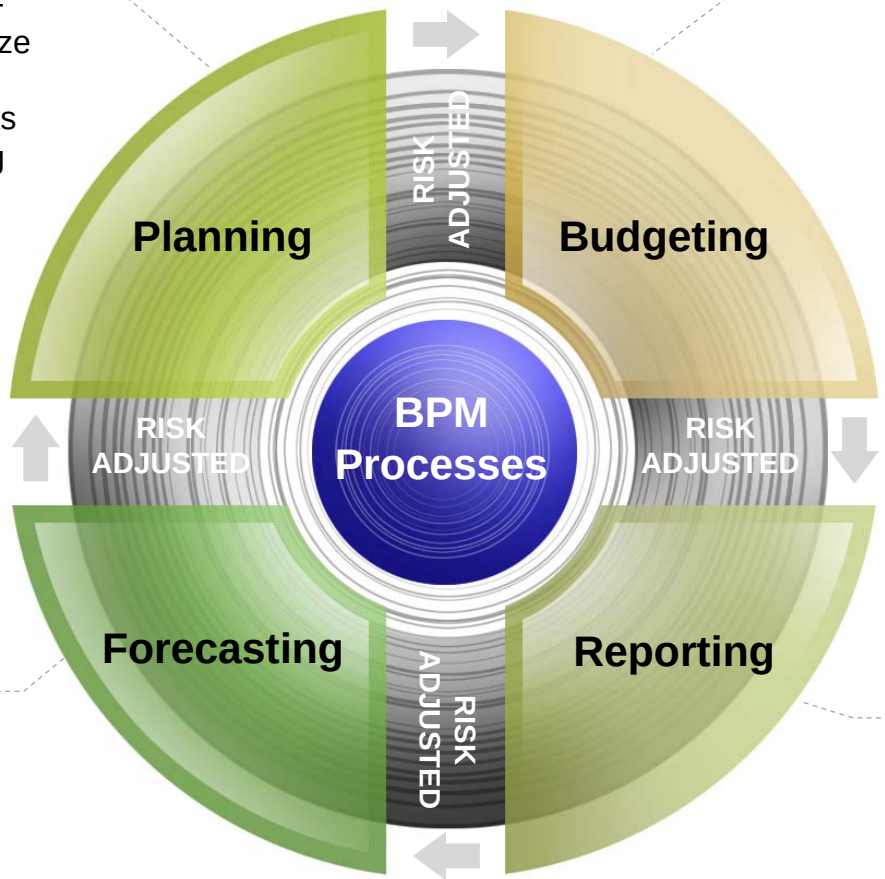
Source: www.businesslink.gov.uk (“Managing Risk”, guide developed by Institute for Risk Management, Cranfield School of Management, Airmic), IBM Global Business Services

Contents

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



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

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

- 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

Contents

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

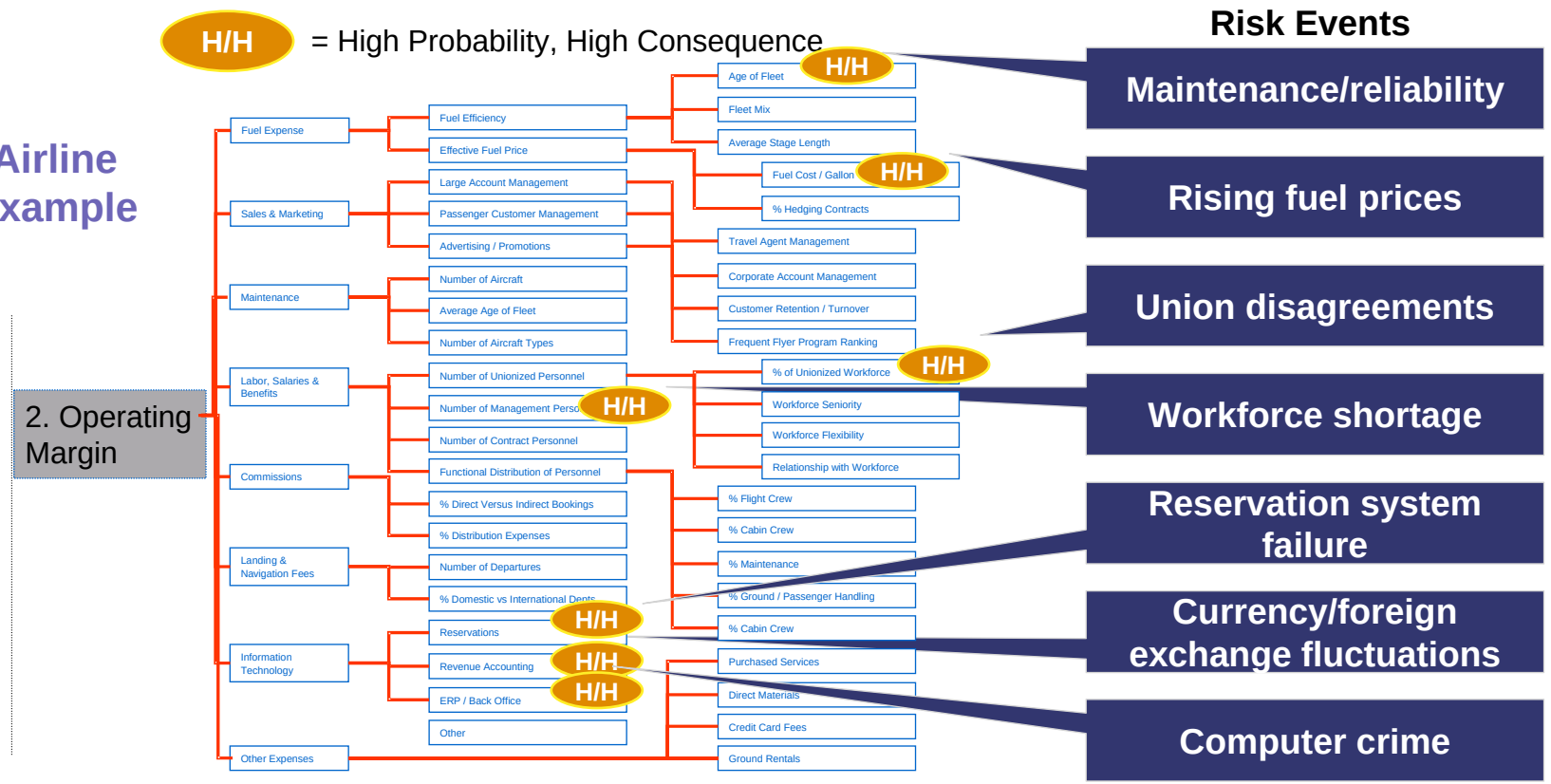
Source: IBM Global Business Services

Organizations need to identify and prioritize potential risk events based on the material impact to key value drivers

Risk Adjusted Planning

Tying Potential Risk Events to Value Drivers

ILLUSTRATIVE

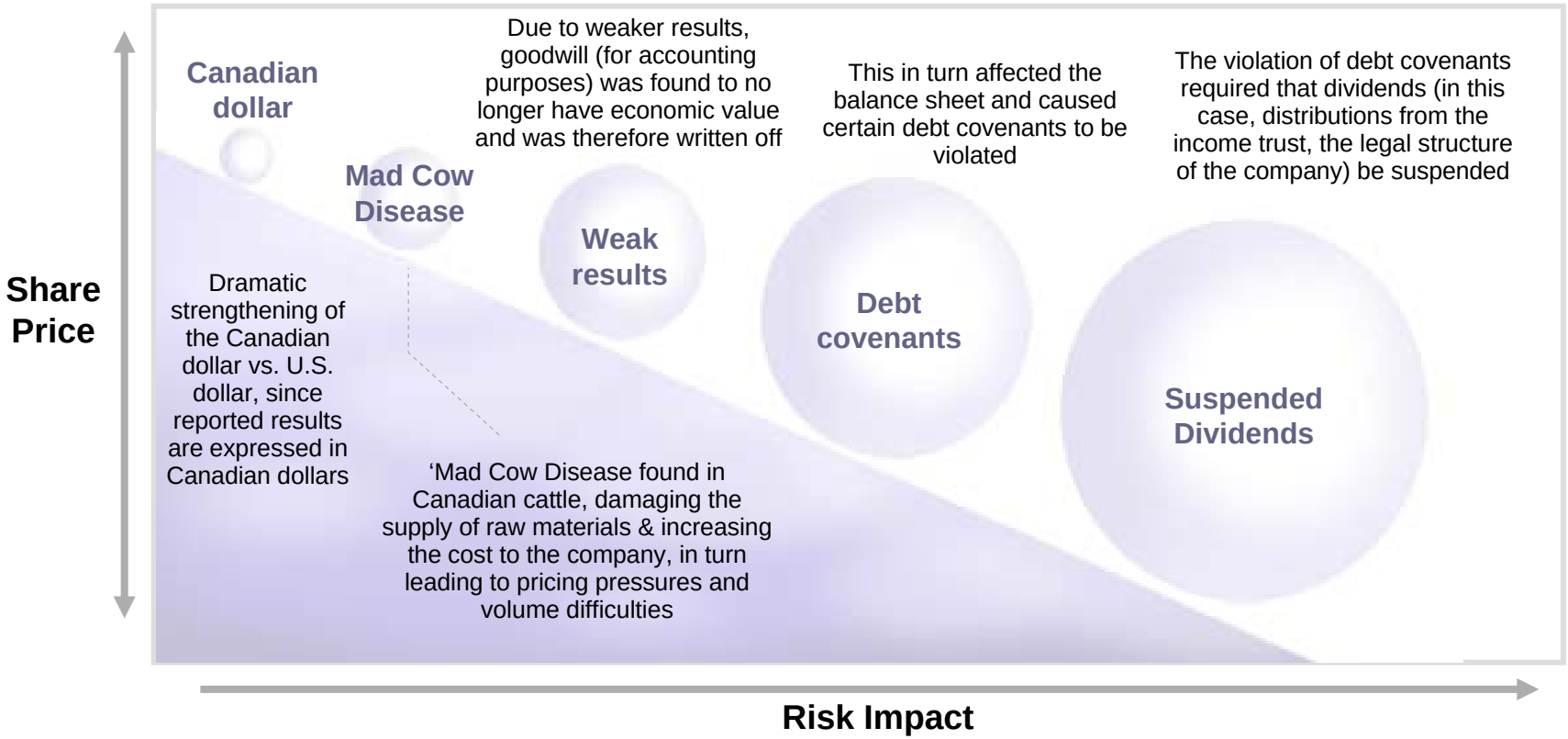


Weighting = Driver's probable Impact on **Value** perception of **Consequence**

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



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

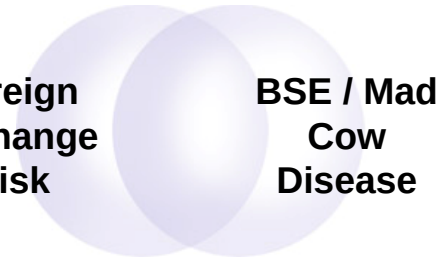
BSE / Mad Cow Disease

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



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

FedEx

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

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

Source: New York Times ("Planes, Trucks and 7.5 Million Packages: FedEx's Big Nights", December 21, 2003)

Contents

Organizations need to move beyond risk-free base cases

Risk-adjusted Budgeting

Adapt budgets

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 in business cases

Risk-adjusted cases can yield greater value

Source: IBM Global Business Services

Risk-adjusted planning output can now inform the budgeting process

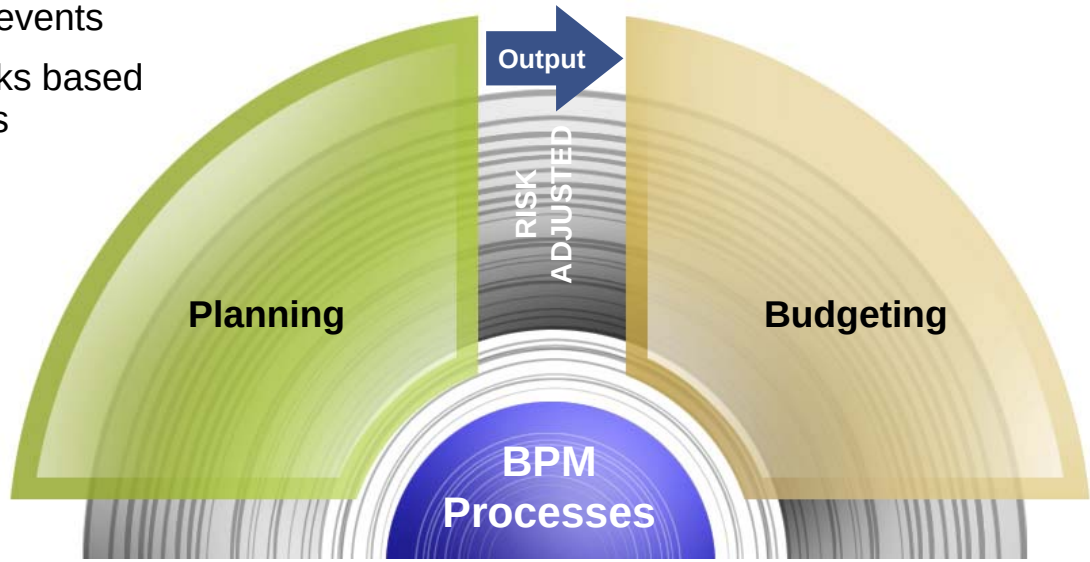
Risk-adjusted Planning Output

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

RISK = (PROBABILITY X CONSEQUENCE) - RESILIENCY

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

ILLUSTRATIVE

(Risk-free) Budget

Operating Unit Current Budget

- 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)

For each risk

Probability

Estimate intrinsic probability of occurrence, usually in ranges or High – Medium (Most Likely) – Low estimates

Consequence

Estimate the intrinsic consequences, if the event occurs, using ranges or multiple estimates[1]

Resiliency

Adjust both probabilities and consequences with impact of mitigation / resiliency efforts

Risk Adjusted Budget

Refined Operating Unit Budget With Risks

Continue to update all parameters over time, as knowledge of probability, consequence, and mitigation or resiliency efforts become better known

Consequence		Likelihood
Very minimal	$0	10%
Minimal	$15	20%
Moderate	$30	40%
Substantial	$60	25%
Very substantial	$100	5%

Adjusted Consequence		Adjusted Likelihood
Very minimal	$0	12%
Minimal	$5	23%
Moderate	$25	43%
Substantial	$50	18%
Very substantial	$80	4%

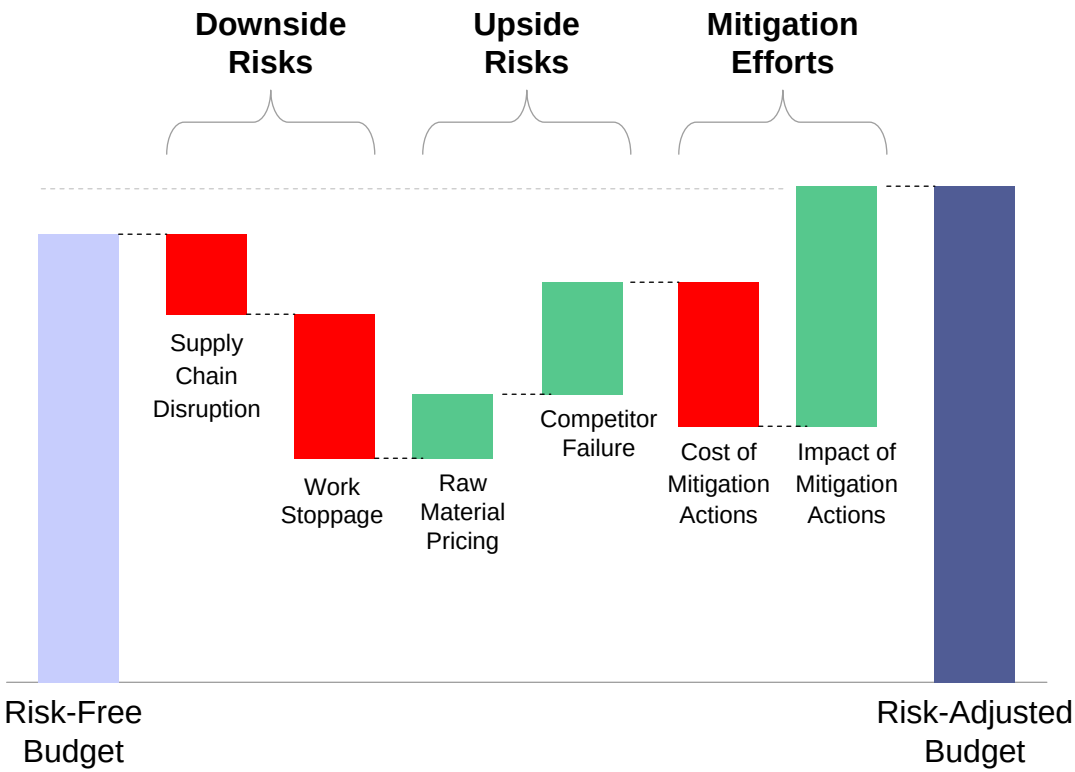
[1] If the consequence is 'fixed' upon occurrence, i.e. if the event occurs the consequence is known, then steps 2 and 3 can be skipped; in other words, if the event happens, the consequence is known to be $X. The only management action that can be taken is to prevent occurrence

Source: IBM Global Business Services

Risk-adjusted cases can yield greater value

ILLUSTRATIVE

Risk-adjusted Cases



Source: IBM Global Business Services

Contents

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

Risk-adjusted Reporting

Elevate to risk 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

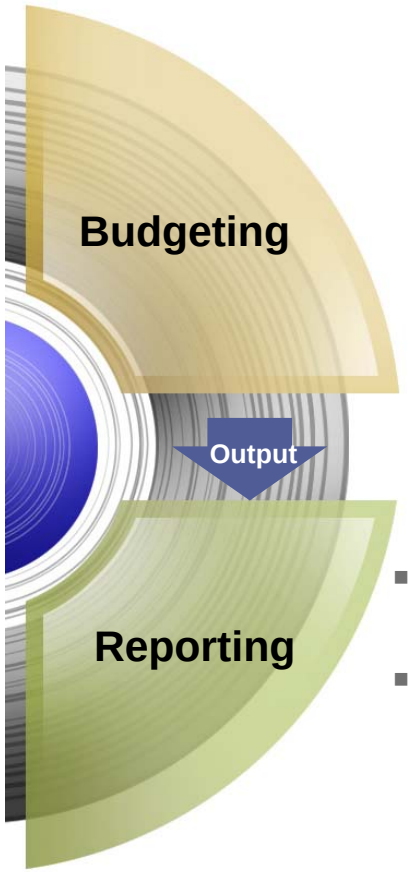
Preventative and corrective actions

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

Key Risk Indicator (Cause)

↓

Risk Event

↓

Expected Loss / Gain (Effect)

- 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

Statistically driven causal models for trend analysis

Cross-process cause-and-effect representation of linkages

Representation of a single process 'pipeline'

Statistical analysis of risk, identification of key failure modes

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

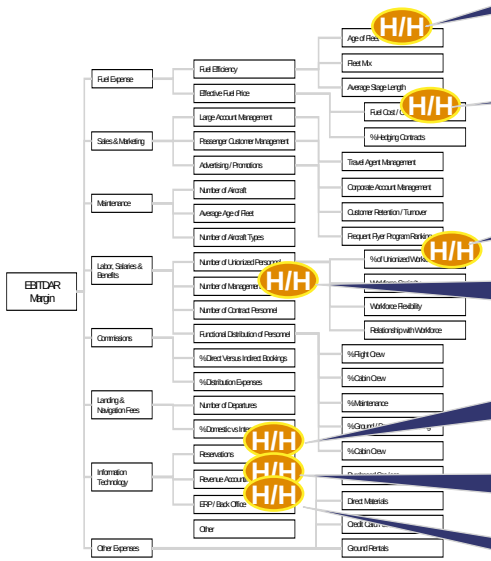
With potential risk events prioritized, mitigation strategies can be devised

Risk Adjusted Reporting

Tying Potential Risk Events to Value Drivers

ILLUSTRATIVE

H/H = High Probability, High Consequence



Risk Events	Mitigation Strategies
Maintenance/reliability	Spares sharing
Rising fuel prices	Fuel hedging
Union disagreements	Mandatory arbitration
Workforce shortage	Cross training
Reservation system failure	Redundancies
Currency/foreign exchange fluctuations	Currency hedging
Computer crime	Fraud detection process

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

Source: IBM Global Business Services

Contents

Organizations need to link rolling forecast of risks and rolling operating forecasts

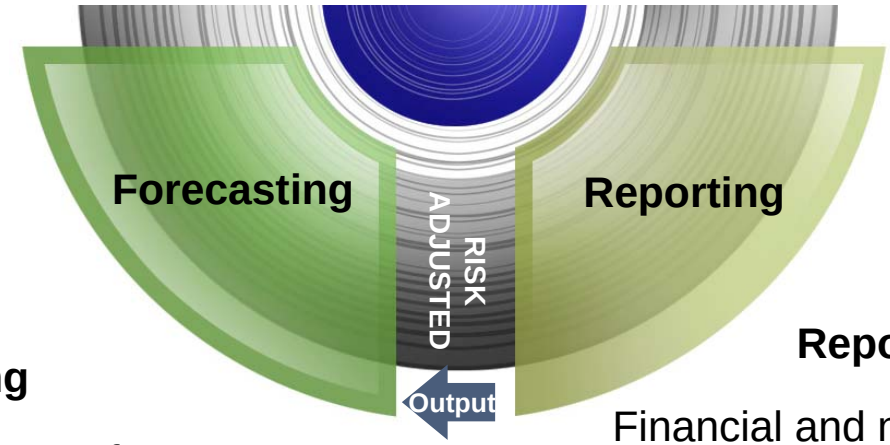
Risk-adjusted Forecasting

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

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…1

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

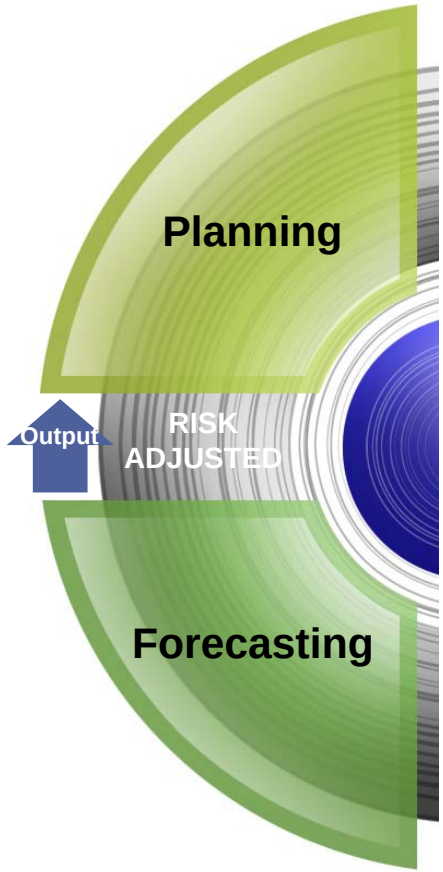
Source: IBM Global Business Services

Risk-adjusted forecasting output can now inform the planning process

Risk-adjusted Forecasting Output

Planning
Revisit risk adjust value drivers
Revise risk mitigation planning

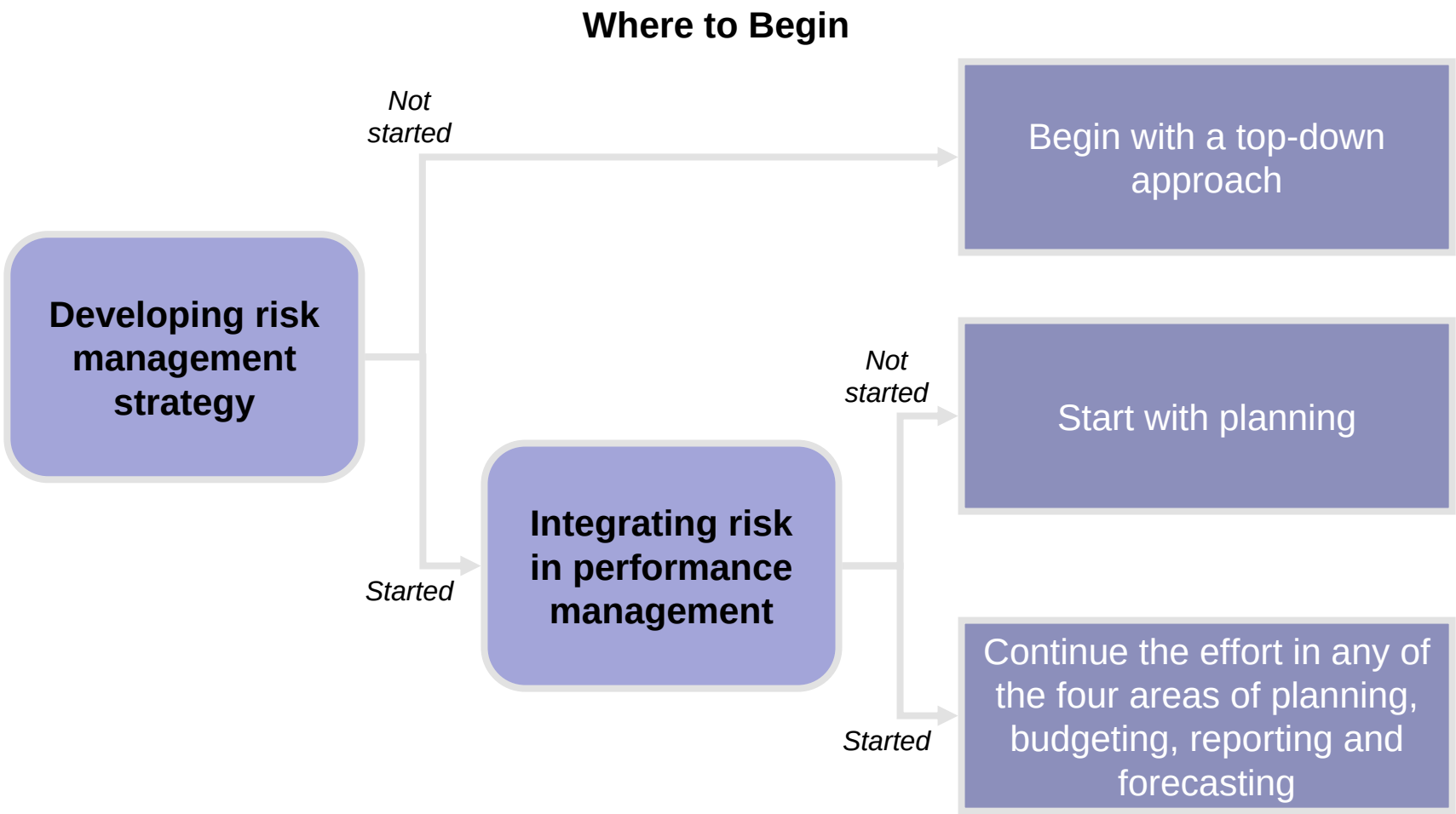
Forecasting Output
Driver-based rolling forecasts adjusted to model future performance incorporating revised knowledge of risk



Source: IBM Global Business Services

Contents

The sequencing of actions will vary based on existing initiatives



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	B. Tactical risk planning	C. BPM/risk integration and implementation
A1. Develop and document corporate strategy and key goals	B1. Map risks to organizational goals via value drivers	C1. Determine operational vision and requirements to implement risk program
A2. Identify risks specific to and currently facing the organization	B2. Determine corrective actions for each risk	C2. Develop blueprint and roadmap for risk/BPM implementation
A3. Drive agreement on risk strategy	B3. Create/update risk plans, budgets and forecasts	C3. Continue to monitor all elements of risk over time

Source: IBM Global Business Services

Contents

Components of probability: Each risk is linked to probability

RISK =

(PROBABILITY x CONSEQUENCE) - RESILIENCY

Intrinsic likelihood	Actions	Adjusted likelihood	Knowledge over time
Intrinsic likelihood of an event occurring, particularly an event the occurrence of which cannot be controlled or influenced in a reasonable time frame[1]	The actions an organization might take to reduce the likelihood that an event occurs	Adjusted likelihood that an event occurs, after execution of any actions to reduce that likelihood	Knowledge over time, with the level of knowledge or certainty generally increasing over time and/or as a given date approaches

[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 x CONSEQUENCE) - RESILIENCY

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

[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

RISK =

(PROBABILITY x CONSEQUENCE) - RESILIENCY

Inherent ability of an organization to recover	Increased through specific actions	Tolerance & consequence mitigation	Speed of response
Inherent ability of an organization to recover from a risk event, in other words to 'return to normal'	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.	Greater resiliency might allow more tolerance for risk as well as the ability to mitigate consequences	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

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

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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