Committee of Sponsoring Organizations of the Treadway Commission

DEVELOPING KEY RISK INDICATORS TO STRENGTHEN ENTERPRISE RISK MANAGEMENT

How Key Risk Indicators can Sharpen Focus on Emerging Risks

By

Mark S. Beasley | **Bruce C. Branson** | **Bonnie V. Hancock**

Authors

Mark S. Beasley
Deloitte Professor of Enterprise Risk Management

Bruce C. Branson
Associate Director, ERM Initiative

Bonnie V. Hancock
Executive Director, ERM Initiative

ERM Initiative at North Carolina State University

The ERM Initiative at North Carolina State University is pioneering thought-leadership about the emergent discipline of enterprise risk management, with a particular focus on the integration of ERM in strategy planning and governance. The ERM Initiative conducts outreach to business professionals through executive education and its internet portal (www.erm.ncsu.edu); research, advancing knowledge and understanding of ERM issues; and undergraduate and graduate business education for the next generation of business executives.

COSO Board Members

David L. Landsittel
COSO Chair

Larry E. Rittenberg
COSO Chair - Emeritus

Mark S. Beasley
American Accounting Association

Chuck Landes
American Institute of Certified Public Accountants

Richard F. Chambers
The Institute of Internal Auditors

Jeff Thomson
Institute of Management Accountants

Marie Hollein
Financial Executives International

Preface

This project was commissioned by COSO, which is dedicated to providing thought leadership through the development of comprehensive frameworks and guidance on enterprise risk management, internal control, and fraud deterrence designed to improve organizational performance and governance and to reduce the extent of fraud in organizations. COSO is a private sector initiative, jointly sponsored and funded by the following organizations:

American Accounting Association (AAA)

American Institute of Certified Public Accountants (AICPA)

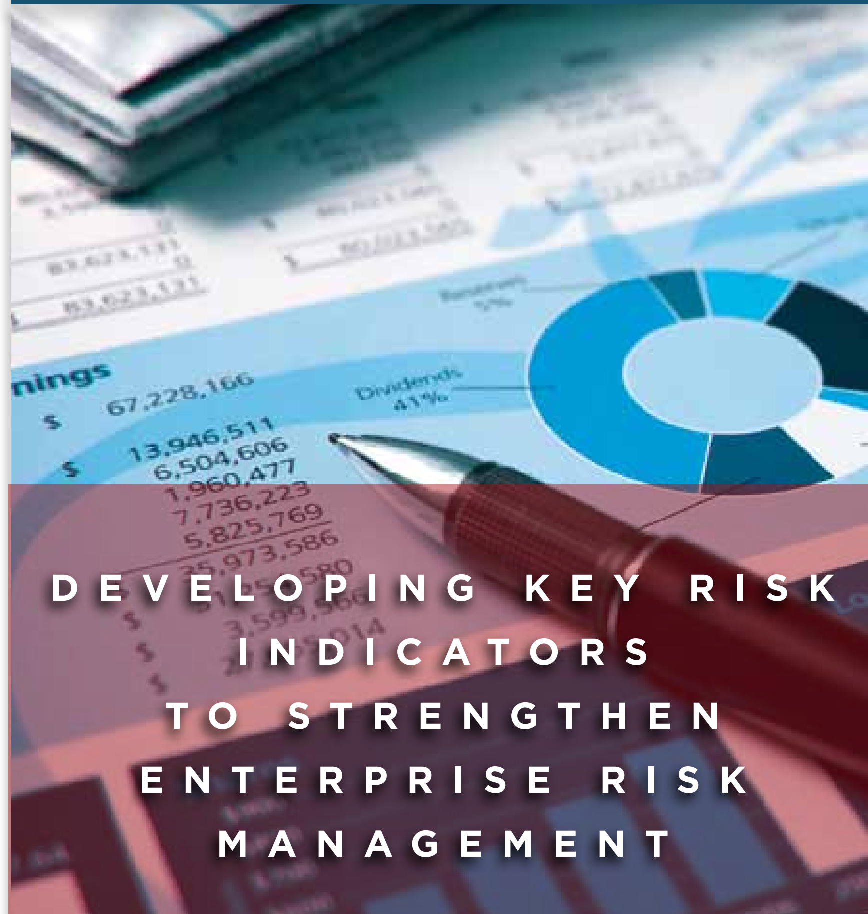
Financial Executives International (FEI)

Institute of Management Accountants (IMA)

The Institute of Internal Auditors (IIA)

Committee of Sponsoring Organizations of the Treadway Commission

www.coso.org



How Key Risk Indicators can Sharpen Focus on Emerging Risks

Research Commissioned by

Committee of Sponsoring Organizations of the Treadway Commission

December 2010

Copyright © 2010, The Committee of Sponsoring Organizations of the Treadway Commission (COSO).
1 2 3 4 5 6 7 8 9 0 PIP 19876543210

All Rights Reserved. No part of this publication may be reproduced, redistributed, transmitted or displayed in any form or by any means without written permission. For information regarding licensing and reprint permissions please contact the American Institute of Certified Public Accountants, licensing and permissions agent for COSO copyrighted materials. Direct all inquiries to copyright@aicpa.org or to AICPA, Attn: Manager, Rights and Permissions, 220 Leigh Farm Rd., Durham, NC 27707. Telephone inquiries may be directed to 888-777-7707.

COSO

www.coso.org

Introduction

Boards of directors have become increasingly aware of their responsibilities related to effective oversight of management's execution of enterprise-wide risk management processes. This is due, in part, to significant external pressures that have developed recently that are thrusting risk management and its oversight to the forefront of many board agendas and management action plans. For example, the New York Stock Exchange in 2004 adopted governance rules that require audit committees of NYSE-listed firms to oversee management's risk oversight processes. In 2008, Standard & Poor's began explicitly evaluating an issuer's enterprise risk management (ERM) processes in seventeen new industries, as an additional component of their credit ratings analysis. In 2009, the Securities and Exchange Commission (SEC) expanded proxy disclosure requirements to increase information for investors about the board's role in risk oversight. The 2010 Federal Financial Reform legislation now mandates risk committees for boards of financial institutions and other entities overseen by the Federal Reserve.

Many organizations are embracing an enterprise-wide approach to risk oversight known as enterprise risk management (ERM) and executive management teams leading these efforts are turning to frameworks, such as COSO's 2004 ***Enterprise Risk Management – Integrated Framework*** (COSO *ERM Framework*), to aid them in strengthening their enterprise-wide risk management processes.

COSO's *ERM Framework* defines ERM as follows:

> *Enterprise risk management is a process, effected by an entity's board of directors, management, and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within the risk appetite, to provide reasonable assurance regarding the achievement of entity objectives.*

As indicated by this definition, ERM provides the opportunity for organizational leaders to achieve a robust and holistic enterprise-wide view of potential events that may affect the achievement of the organization's objectives. Because risks are constantly evolving as an organization strives to achieve its objectives, there is a high demand for relevant and timely risk information.

Many organizations are seeking to develop a process that provides management and the board of directors with rich information about potential events that may affect the entity, especially top risk exposures, that they can monitor on an ongoing basis. While most organizations monitor numerous key *performance* indicators (KPIs), often those indicators shed insights about risk events that have already affected the organization. Increasingly, boards and senior executives are looking to develop metrics or indicators to help to better monitor potential future shifts in risk conditions or new emerging risks so that management and boards are able to more proactively identify potential impacts on the organization's portfolio of risks. Doing so enables management and the board to be in a better position to manage events that may arise in the future on a more timely and strategic basis. This latter type of metric or indicator is frequently referred to as a key *risk* indicator (KRI).

The purpose of this thought paper is to help management develop effective key risk indicators (KRIs) to heighten board and management enterprise risk awareness in order to increase the effectiveness of an ERM process and improve the execution of an organization's strategy.

Content Outline

Page

Description

Differentiating Key Performance Indicators from Key Risk Indicators 1

Developing Effective Key Risk Indicators 2

KRIs Provide Opportunities for Proactive Strategic Risk Management 4

Sources of Information When Developing KRIs 5

KRI Communication and Reporting: Role of the Board, Management, and Risk Owners 7

The Value Proposition for Key Risk Indicators 10

Summary Observations 11

About COSO 12

About the Authors 12

Differentiating Key Performance Indicators from Key Risk Indicators

It is important to distinguish key *performance* indicators (KPIs) from key *risk* indicators (KRIs). Both management and boards regularly review summary data that include selected KPIs designed to provide a high-level overview of the performance of the organization and its major operating units. These reports often are focused almost exclusively on the historical performance of the organization and its key units and operations. For example, reports often highlight monthly, quarterly, and year-to-date sales trends, customer shipments, delinquencies, and other performance data points relevant to the organization. It is important to recognize that these measures may not provide an adequate "early warning indicator" of a developing risk because they mostly focus on results that have already occurred.

While KPIs are important to the successful management of an organization by identifying underperforming aspects of the enterprise as well as those aspects of the business that merit increased resources and energy, senior management and boards also benefit from a set of KRIs that provide timely leading-indicator information about emerging risks. Measures of events or trigger points that might signal issues developing internally within the operations of the organization or potential risks emerging from external events, such as macroeconomic shifts that affect the demand for the organization's products or services, may provide rich information for management and boards to consider as they execute the strategies of the organization.

Key risk indicators are metrics used by organizations to provide an early signal of increasing risk exposures in various areas of the enterprise. In some instances, they may represent key ratios that management throughout the organization track as indicators of evolving risks, and potential opportunities, which signal the need for actions that need to be taken. Others may be more elaborate and involve the aggregation of several individual risk indicators into a multi-dimensional score about emerging events that may lead to new risks or opportunities.

An example related to the oversight of accounts receivable collection helps illustrate the difference in KPIs and KRIs. A key performance indicator for customer credit is likely to include data about customer delinquencies and write-offs. This key performance indicator, while important, provides insights about a risk event that has already occurred (e.g., a customer failed to pay in accordance with the sales agreement or contract). A KRI could be developed to help anticipate potential future customer collection issues so that the credit function could be more proactive in addressing customer payment trends before risk events occur. A relevant KRI for this example might be analysis of reported financial results of the company's 25 largest customers or general collection challenges throughout the industry to see what trends might be emerging among customers that could potentially signal challenges related to collection efforts in future periods.

Objective

Manage the collection of accounts receivable to reduce loss due to write-offs

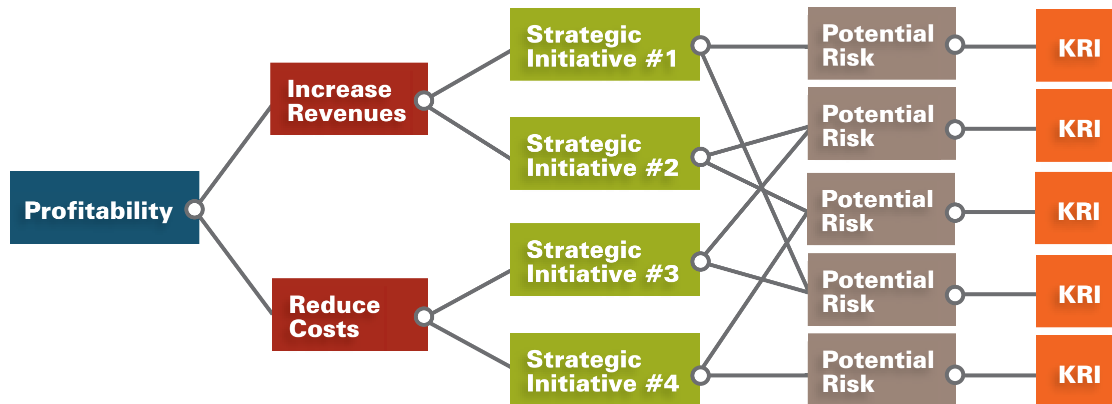
Key Performance Indicator (KPI)	Key Risk Indicator (KRI)
Data about write-offs of accounts in most recent month, quarter, year.	Analysis of reported financial results for the company's 25 largest customers or general collection challenges throughout the industry that highlight trends signaling future collection concerns.

Developing Effective Key Risk Indicators

A goal of developing an effective set of KRIs is to identify relevant metrics that provide useful insights about potential risks that may have an impact on the achievement of the organization's objectives. Therefore, the selection and design of effective KRIs starts with a firm grasp of organizational objectives and risk-related events that might affect the achievement of those objectives. Linkage of top risks to core strategies helps pinpoint the most relevant information that might serve as an effective leading indicator of an emerging risk.

In the simple illustration below, management has an objective to achieve greater profitability by increasing revenues and decreasing costs. They have identified four strategic initiatives that are critical to accomplishing those objectives. Several potential risks have been identified that may have an impact on one or more of four key strategic initiatives. Mapping key risks to core strategic initiatives puts management in a position to begin identifying the most critical metrics that can serve as leading key risk indicators to help them oversee the execution of core strategic initiatives. As shown below, KRIs have been identified for each critical risk. Mapping KRIs to critical risks and core strategies reduces the likelihood that management becomes distracted by other information that may be less relevant to the achievement of enterprise objectives.

Linking Objectives to Strategies to Risks To KRI's



To illustrate further, consider a simple example involving a chain of family-style buffet restaurants. Management is interested in avoiding a negative earnings event that could arise due to unexpected market conditions that might negatively affect revenues. They know that restaurant traffic is directly affected by the availability of customer discretionary income. As discretionary income levels fall off, customers are less likely to dine outside their homes. A key metric that management uses as a leading indicator of potential changes in customer discretionary income levels is average gasoline prices people pay at the pump. Management has determined that when gasoline prices spike (or are expected to rise), discretionary income for individuals and families representing their core customer base decreases. When gas prices rise rapidly or are forecasted to stay at unusually high levels, customer traffic begins to drop.

Management has found that close monitoring of forecasts of per-gallon prices of gas in the chain's geographic market and trends in oil futures prices help management proactively identify early indicators of potential changes in customer visits. Monitoring these key risk metrics provides management the opportunity to proactively modify sales strategies by adjusting marketing and restaurant promotion events thereby reducing the impact of the risk as discretionary income begins to decline.

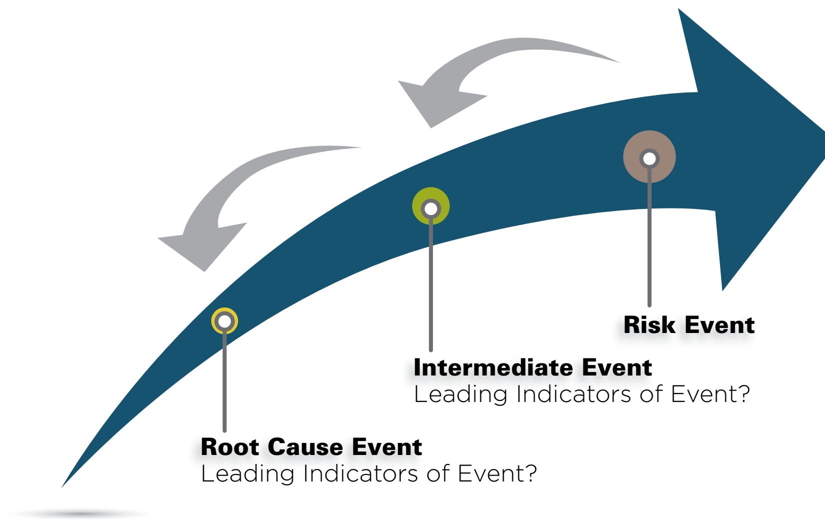
Example

A buffet-style restaurant chain monitors gas prices to identify sales and profitability trends that may signal the need for modifications to sales strategies.

Objective	Strategic Initiative	Potential Risks	Key Risk Indicators	Strategic Response
Increase earnings through revenue increases.	Promote premium buffet options to attract additional customers.	Customer income levels and discretionary income drop and prevent customers from visiting restaurants or from selecting premium buffet options.	Trends in per-gallon gasoline prices in the chain's geographic markets Trends in oil futures prices	Revise marketing to promote more "value" options if gasoline price trends are rising.

An effective method for developing KRIs begins by analyzing a risk event that has affected the organization in the past (or present) and then working backwards to pinpoint intermediate and root cause events that led to the ultimate loss or lost opportunity. The goal is to develop key risk indicators that provide valuable leading indications that risks may be emerging. The closer the KRI is to the ultimate root cause of the risk event, the more likely the KRI will provide management time to proactively take action to respond to the risk event. This process can be depicted visually in the following manner.

Leading Indicators of Risk Event



In this diagram, the passage of time proceeds from a root cause event to (potentially) an intermediate event that ultimately leads to a risk event. In developing a KRI to serve as a leading indicator for potential future occurrences of this risk, it can be helpful to think through the chain of events that led to the loss so that management can uncover the ultimate driver (i.e., root cause(s)) of the risk event. Management can then use that analysis to identify information associated with the root cause event or intermediate event that might serve as a key risk indicator related to either event. When KRIs for root cause events and intermediate events are monitored, management is in an enviable position to identify early mitigation strategies that can begin to reduce or eliminate the impact associated with an emerging risk event.

As an illustration, let's assume that management is concerned about the risk that the organization may breach covenants associated with its outstanding debt. In this example, a covenant breach would represent the risk event that is of concern. In developing effective KRIs to help management monitor the risk of default, they may look backwards to identify potential intermediate events that may arise before the organization reaches the point of a covenant breach. For example, an intermediate event preceding a possible covenant breach might involve decreases in sales in recent months (i.e., covenants based on net income or interest coverage). Additionally, shortages of cash or increases in the need for short-term borrowings or draws under existing lines-of-credit may provide early warning signs that a covenant breach may be looming in the near term. Key risk indicators that help monitor these intermediate events put management in a better position to implement potential mitigation strategies, such as earlier discussions with key lenders before an actual covenant breach has occurred.

But, only monitoring KRIs tied to intermediate events allows less time for management to proactively manage the emerging risk event than would be the case if management had access to KRIs related to earlier root cause events that often precede intermediate events. In this example, external data, such as customer industry reports and economic indicators, combined with internal data, such as input pricing trends, labor issues, plant capacity, key staff turnover, among other KRIs may provide useful leading indicators of conditions that may likely initiate events, such as future drops in sales or future cash shortages that will lead to an intermediate event and ultimately to the actual risk event of covenant default. In addition, these key risk indicators may highlight potential opportunities to increase sales or improve operations that management may wish to capture.

The following figure illustrates the linkage of KRIs to both root cause events and intermediate events.

Example
KRIs to Inform About Risk of Debt Covenant Default

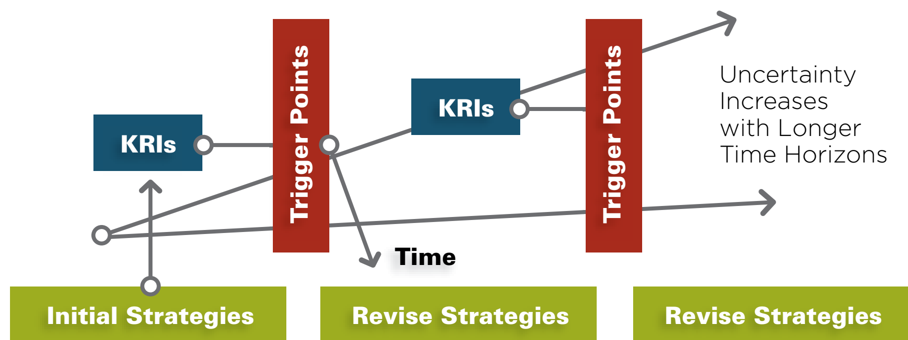
KRIs Provide Opportunities for Proactive Strategic Risk Management

A well-designed ERM system provides information that allows management to understand whether key strategic objectives are being met and to identify opportunities to adjust strategies and tactics to take advantage of shifts in the environment that might be exploited for the benefit of the organization and its stakeholders. As illustrated by the figure on the next page, management selects initial strategies at a point in time. As time goes by, the range of uncertainty begins to increase, threatening the successful execution of those strategies.

To help monitor risks that unfold due to that uncertainty, management has identified various KRIs that they are monitoring as they execute the chosen strategic initiatives. In advance, management has pre-determined certain levels or thresholds for each KRI that will trigger actions by management to adjust their strategies proactively to manage the risk accordingly. Once strategies are revised, new KRI trigger points are established with action plans pinpointed in advance.

This strategic use of KRIs increases the likelihood that goals and objectives set by management are achieved due to the fact that risks and the related strategies are managed more proactively when relevant KRIs have been identified.

KRIs Facilitate Proactive Management of Emerging Risks



Sources of Information When Developing KRIs

Virtually all organizations possess existing risk metrics that have evolved over time. These metrics should be carefully evaluated for their efficacy and continue to be employed if found to be valuable in highlighting potential emerging risks. Augmenting these existing KRIs with new metrics is likely to be required, however.

The KRI identification process may benefit from subject matter experts within the organization as these individuals may be in the best position to know where stress points (i.e., root cause events and intermediate events) exist in the units they manage or processes they oversee. Their input helps ensure that key risks are not overlooked and that KRIs designed to highlight these risks or trends are most likely to be effective in communicating an early indication of necessary action. One caution to note is that these individuals may be biased towards existing risk metrics already in use, and that they are comfortable with, at the expense of possibly improved measures that require additional analysis and validation before adoption.

Another important element in designing effective KRIs involves the assurance that all parties involved in collecting and aggregating KRI data are clear about definitions of individual data items to be captured and any conversion or standardization methodology to be utilized. Without confidence in the uniformity of the KRI measurement approach, aggregated information will lack robustness and introduce noise into the ultimate decision process. For example, if customer financial conditions are to be captured across business units as a KRI, it will be important to carefully define how that is to be measured. In this scenario, the following questions may need to be addressed. Should all customers be equally weighted? Should customer size/volume of business be a factor? How much time must elapse before a customer is deemed to be in a difficult financial state? Are any customers shared by more than one business unit? If so, which unit makes the determination?

An important element of any KRI is the quality of the available data used to monitor a specific risk. Attention must be paid to the source of the information, either internal to the organization or drawn from an external party. Sources of information are likely to exist that can help inform the choice of KRIs to be employed. For example, internal data may be available related to prior risk events that can be informative about potential future exposures. However, internal data is typically unavailable for many risks—especially those that have not been encountered previously. And, often risks likely to have a significant impact may arise from external sources, such as changes in economic conditions, interest rate shifts, or new regulatory requirements or legislation. Thus, many organizations discover that relevant KRIs are often based on external data, given that many root cause events and intermediate events that affect strategies arise from outside the organization.

External sources such as trade publications and loss registries compiled by independent information providers may be helpful in identifying potential risks not yet experienced by the organization. Discussions with key stakeholders such as customers, employees and suppliers may provide important insights into risks they face that may ultimately create risks for the organization. A careful understanding of regulatory and legal requirements that must be fulfilled is likely to be helpful in anticipating potential risks and events that precede them.

KRI data sourced from external and/or independent parties provides the benefit of objectivity. External/independent parties are not necessarily unaffiliated with the organization, but are removed from the business unit from which the KRI is measured. Almost certainly, trade-offs will be required in this area. Those individuals charged with ongoing management of a particular risk are the least objective source (but at times may be the only available resource for the data required to produce the KRI in question). A careful validation of external sources is desirable to enhance confidence in the ultimate effectiveness of the KRI built from that data.

It is unlikely that a single KRI will adequately capture all facets of a developing risk or risk trend. For this reason, it is helpful to analyze a collection of KRIs simultaneously to help form a better understanding of the risk being monitored. That said, some KRIs are likely to possess superior predictive power over other risk metrics and it will be important to weight each piece of information to reflect its past performance in forecasting a risk event. Some have referred to this process as assembling a mosaic of information that collectively can best provide the early warning of potential threats developing over time. Realistically, substantial judgment and experience must be brought to bear on this process to extract the most meaningful inferences. As the use of KRIs evolves in an organization, opportunities for making these judgments will likely yield improvements in KRI performance.

The following graphic summarizes core elements of well-designed KRIs.

Based on established practices or benchmarks

Developed consistently across the organization

Provide an unambiguous and intuitive view of the highlighted risk

Allow for measurable comparisons across time and business units

Provide opportunities to assess the performance of risk owners on a timely basis

Consume resources efficiently

An effective way to get started is to take the top 5-10 most significant risks the organization faces, and charge each risk owner (the person with primary management responsibility for a given risk) with the task of identifying one or two KRIs for their assigned risks. Often, there will be initial confusion as to the difference between key performance indicators that are currently being tracked and KRIs. It will be important to provide an example or two to help the risk owners make this distinction.

In the following table, several KRIs are illustrated for a set of hypothetical risks faced by a regional grocery store chain seeking to grow earnings by adding new stores in the Washington, DC and surrounding areas. The company acquires and develops real estate properties where the grocery store serves as the anchor tenant alongside other smaller retail outlets. Acquisition and development of store properties are contingent on the company's ability to obtain favorable financing. While these are unique to a particular business context, they nicely portray the goal of developing anticipatory data to actively monitor important risks facing this enterprise.

Example

Regional grocery store chain seeks to grow earnings by adding new stores in Northern Virginia and Washington, DC area.

Risk Events	Sample KRIs to Monitor Risk Proactively
1. Economic downturn in Washington, DC markets affect retail storefront rental demand and real estate values	• Actual and projected retail store occupancy rates in the Washington, DC market • Commercial real estate rental market information about leasing prices and options for similar quality retail properties in the Washington, DC area.
2. Competition increases in the Washington, DC markets	• Change in number of grocery stores in market area • Announcements of expansions by big-box retailers and superstores • Significant and sustained price reductions by grocery competitors in the Washington, DC area
3. Cost of financing too high	• Spreads on debt issuances for comparably rated companies • Actual and projected interest rates • Company stock performance and related trends in competitor stock
4. Delays in developing property and opening stores	• Compare actual construction and store opening benchmark dates to pre-determined target dates • Monitor construction labor union issues, including competing demands for construction labor that might arise due to other major construction projects in Washington, DC area
5. Long term economic downturn results in deteriorating customer base	• Employment outlook for federal government agencies and government supportive businesses • Forecasts related to unemployment • Consumer spending trends in Washington, DC area

KRI Communication and Reporting: Role of the Board, Management, and Risk Owners

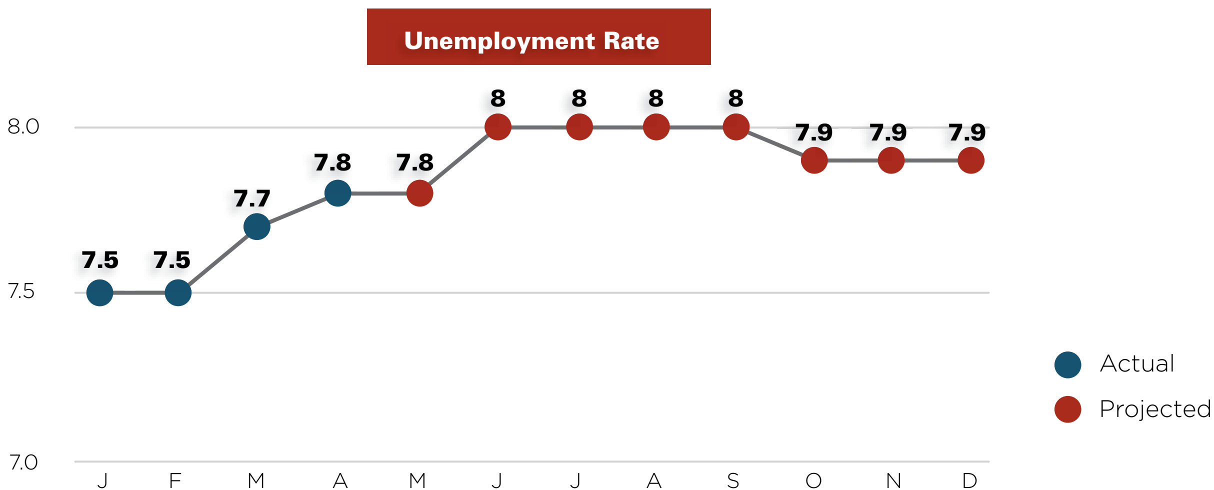
As is true for the larger goal of implementing an enterprise risk management process in general, the development and implementation of a set of KRIs requires sensitivity to organizational culture and a strong message of the importance of this task from top management and the board of directors. Creating buy-in from those individuals within the organization that have day-to-day management responsibility for various risks will be necessary.

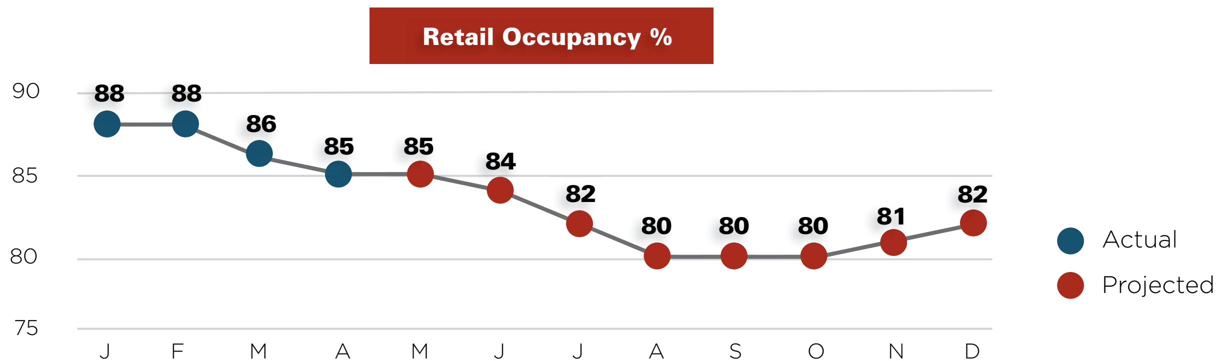
The primary beneficiary of KRIs will be the risk owners themselves. They will have a set of predictive tools that should allow them to better manage their business units to meet goals and objectives set for that unit. Senior management and boards of directors do not need to know, nor are they necessarily in a position to fully appreciate, all KRIs employed within the organization, but they should be expected to understand and be kept updated on KRIs related to the organization's top risk exposures. The person charged with oversight of the enterprise risk management process can work in concert with the risk owners to identify appropriate trigger points and action or treatment plans to be initiated in the event those points are reached. Exception reports can be developed on a regular basis, the timing of which will likely vary as a function of the level within the organization at which the recipient(s) reside.

Senior management may need to review KRI data for risks and opportunities with significant potential impact to the organization. Likewise, boards of directors may only require updates of the most significant KRI data in order to be confident that the risk management process is functioning as designed and approved. Dashboard reports that visually display KRI data overlaying established trigger points can provide both an intuitive and effective approach to providing this information to boards. As well, the simple use of color to depict the status of certain KRIs can quickly highlight those that require management attention. Green, yellow, and red are common choices to display conditions associated with being on target to meet plan goals, in some danger of not meeting plan goals, and not meeting plan goals, respectively.

These diagrams illustrate examples of effective visual displays of KRI data for the regional grocery store chain described previously. The table on the right gives a quick status and trend of each of the KRIs, and then the two charts below and on the next page provide more detailed information for the two KRIs that indicate that plan goals are not being met. This type of high level report would be appropriate for communicating KRIs to the board of directors or senior management.

KRI	Status	Trend
Retail Occ	● (red)	⌄
RE Rental Market	● (yellow)	⌄
Change in Stores	● (green)	⌃
Big Box Exp	● (green)	⌃
Price Comp	● (yellow)	⌄
Debt Spreads	● (green)	‹›
Interest Rates	● (green)	‹›
Stock Perf.	● (green)	⌄
Constr. Progress	● (yellow)	‹›
Labor Market	● (green)	‹›
Govt. Emplmt.	● (yellow)	‹›
Unemployment	● (red)	⌄
Cons. Spending	● (yellow)	⌄





Also see COSO's 2004 ***Enterprise Risk Management – Integrated Framework, Volume 2, Application Techniques*** for additional examples of dashboard reports.

It is also important to consider the frequency of reporting KRIs. The appropriate time horizon is dependent upon the primary user of a specific KRI. For operational managers, real-time reporting is attractive. For senior management, where a compilation of KRIs that highlights potential deviations from organization-level targets is the likely goal, a less frequent (e.g., monthly) status report may be sufficient. At the board level, the reporting is often aggregated to allow for a more strategic evaluation of the data. It is important to remember that a KRI does not manage or treat risk, and can lead to a false sense of security if poorly designed. Ideally, active assessment of the "predictive-ability" of each KRI is an ongoing facet of the organization's ERM process.

Once an initial set of KRIs has been designed and deployed, it is vital that monitoring occurs to validate their effectiveness. Even well-designed and effective KRIs can lose value as organizational objectives and strategies adapt to an ever-changing environment. There is a very real danger, once a network of KRIs has been established, that management devotes resources elsewhere within the organization and ignores the need to refine and replace existing risk metrics to better capture the data relevant to the new environment. As part of the initial development and deployment phase, attention should be paid to the process that will be followed to continuously track KRI performance.

The Value Proposition for Key Risk Indicators

The development of KRIs can provide relevant and timely information to both the board and senior management, which is significant to effective risk oversight. Effective KRIs are most often found when they are developed by teams that include the professional risk management staff and business unit managers with a deep understanding of the core operations and strategies of the business subject to potential risks. Ideally, KRIs are developed in concert with strategic plans for individual business units and incorporate acceptable deviations from plan that fall within the overall risk appetite of the organization.

Effective KRIs can provide value to the organization in a variety of ways. Potential value may be derived from each of the following contributions:

- **Risk Appetite** – KRIs require the determination of appropriate thresholds for action at different levels within the organization. In the grocery chain example, the unemployment KRI would have a predetermined level at which the organization's appetite for the risk associated with the expansion strategy would be exceeded. By mapping KRI measures to identified risk appetite and tolerance levels, KRIs can be a useful tool for better articulating the risk appetite that best represents the organizational mindset.

- **Risk and Opportunity Identification** – KRIs can be designed to alert management to trends that may adversely affect the achievement of organizational objectives or may indicate the presence of new opportunities. In the grocery chain example, if retail occupancy levels increase significantly, it may indicate an opportunity for more development.

- **Risk Treatment** – KRIs can initiate action to mitigate developing risks by serving as triggering mechanisms for organizational units charged with monitoring particular KRIs. As well, KRIs can serve as controls by defining limits to certain actions. In the grocery chain example, there may be a point at which unemployment reaches such a high level that the risk of moving forward with expansion exceeds the organization's appetite and therefore that KRI level would trigger a revision to the strategy of store expansion.

- **Risk Reporting** – By design, KRIs can provide measurable data conducive to aggregation. Summary reports, as shown earlier for the grocery chain example, can be quickly communicated to appropriate senior managers and board members with oversight responsibilities.

- **Compliance Efforts** – For organizations subject to regulatory oversight, KRIs may be useful in demonstrating compliance with established requirements in areas such as capital adequacy or reserve levels.

KRIs designed to assist the board and executive management in anticipating trends in potential risk-related events can add considerable value to enterprise-wide risk oversight efforts by positioning the board and management so that they can proactively adjust strategies in advance of or in response to risk events.

In making the business case for KRI development, there are several examples of benefits that may be obtained:

- **Improved Performance** – The use of KRIs to anticipate emerging risks and shifts in risks over time can reduce losses, identify opportunities for strategic exploitation, and potentially reduce the cost of capital by mitigating perceptions of risk borne by capital providers.

- **Improved Processes** – KRIs hold promise in helping reduce service disruptions, supply chain management, and enhancing customer experiences by potentially avoiding certain decisions that unexpectedly create risks associated with these processes.

- **Improved Workplace Environment** – The use of KRIs can lead to fewer episodes of crisis management, where normal tasks must be set aside for full-time devotion to a developing issue. This allows for a more stable and smoothly functioning organization.

Said differently, a robust set of KRIs should help reduce the likelihood of surprises and position management and boards in a proactive versus reactive stance.

Summary Observations

KRIs are metrics used to provide an early signal of increasing risk exposure in various areas of the organization. In some instances, they may be little more than key ratios that the board and senior management track as indicators of evolving problems, which signal that corrective or mitigating actions need to be taken. Other times, they may be more elaborate, involving the aggregation of several individual risk indicators into a multi-dimensional risk score about emerging potential risk exposures. KRIs are typically derived from specific events or root causes, identified internally or externally, that can prevent achievement of strategic objectives. Examples can include items such as the introduction of a new product by a competitor, a strike at a supplier's plant, proposed changes in the regulatory environment, or input-price changes.

The design and roll-out of a set of KRIs is an important element of an organization's enterprise risk management process. This paper has identified the potential benefits of developing a set of KRIs, important design elements of those KRIs, and an appropriate methodology for communicating KRI data to members of senior management and the board. Examples of specific KRIs have been provided to help differentiate them from key performance indicators that are commonly employed by many organizations. As organizations look to enhance their risk management approach, the addition of KRIs to complement existing risk identification methods will likely yield significant benefits.

An executive summary of COSO's ***Enterprise Risk Management—Integrated Framework*** provides an overview of the key principles for effective enterprise risk management and is available for free download at **www.coso.org**. More detailed guidance, including examples about effective implementation of key ERM principles, is contained in the full two-volume set.

About COSO

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) is a voluntary private-sector organization comprised of the following organizations dedicated to guiding executive management and governance participants towards the establishment of more effective, efficient, and ethical business operations on a global basis. It sponsors and disseminates frameworks and guidance based on in-depth research, analysis, and best practices.

COSO, 2010

About the Authors

Mark S. Beasley, CPA, Ph.D., is the Deloitte Professor of Enterprise Risk Management and director of the ERM Initiative at North Carolina State University (see www.erm.ncsu.edu). He specializes in the study of enterprise risk management, corporate governance, financial statement fraud, and the financial reporting process. He is a board member of the Committee of Sponsoring Organizations of the Treadway Commission (COSO), served on the Conference Board's ERM Working Group and frequently works with boards and senior executives as they implement ERM. He earned his Ph.D. at Michigan State University.

Bruce C. Branson, Ph.D., is a professor of accounting and associate director of the Enterprise Risk Management (ERM) Initiative at North Carolina State University. His teaching and research is focused on financial reporting and includes an interest in the use of derivative securities and other hedging strategies for risk reduction/risk sharing. He also has examined the use of various forecasting and simulation tools to form expectations used in financial statement audits and in earnings forecasting research. He earned his Ph.D. at Florida State University.

Bonnie V. Hancock, M.S., is the executive director of the Enterprise Risk Management (ERM) Initiative, and is also an executive lecturer in accounting at NC State's College of Management. Her background includes executive positions at both Progress Energy and Exploris Museum. She has served as president of Exploris, and at Progress Energy, has held the positions of president of Progress Fuels (a Progress Energy subsidiary with more than $1 billion in assets), senior vice president of finance and information technology, vice president of strategy and vice president of accounting and controller. She currently serves on the board of directors for AgFirst Farm Credit Bank and Powell Industries.

www.erm.ncsu.edu

COSO

Committee of Sponsoring Organizations
of the Treadway Commission

www.coso.org

Thought Leadership in ERM

DEVELOPING KEY RISK INDICATORS TO STRENGTHEN ENTERPRISE RISK MANAGEMENT

How Key Risk Indicators can Sharpen Focus on Emerging Risks

Committee of Sponsoring Organizations of the Treadway Commission

www.coso.org