

# Risk Reporting & Key Risk Indicators

A Case Study Analysis

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# Introduction

The main purpose of this case study is to take a closer look at risk reporting metrics and key risk indicators (KRIs). KRIs are metrics used to provide an early signal of increasing risk exposure in various areas of the organization. This study is based on three different companies in different industries illustrating the overall Enterprise Risk Management (ERM) process and the role that risk reporting and KRIs play in that process. For each company, the study provides examples of how risk metrics can be developed, monitored, and reported. The main goal of the research is to provide examples that could be used as a guideline to help other organizations implement risk metrics and indicators to effectively monitor major risks. In addition, this case study may also provide insights on the structure of the ERM function and the operation of the ERM process at the three different companies.

# Case Illustration #1: Midwestern Utilities, Inc.

## **OVERVIEW & COMPANY BACKGROUND**

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Midwestern Utilities, Inc., (The Company) is a utility holding company with approximately \$20 billion in total assets, \$5 billion in annual revenues, and a workforce of approximately 10,000 employees. Its principal business operations are regulated electric and gas delivery businesses. The Company provides electric services to over 1 million customers in rural and urban areas and delivers gas services to over 100,000 customers in a few large metropolitan areas. The majority of the Company's business operations are subject to regulation.

## **ERM PROCESS**

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The Company has always had a strong focus on risk management given the nature of its business and the fact that it faces extensive regulation. However, it had not taken a structured enterprise-wide approach to managing risks until it began a formal Enterprise Risk Management (ERM) program after the Sarbanes-Oxley Act of 2002 was passed. The CFO of the Company initiated the process by selecting a director of ERM. The newly appointed director of ERM consulted two other utility companies that had more mature ERM processes to identify best practices that are important for a successful ERM launch.

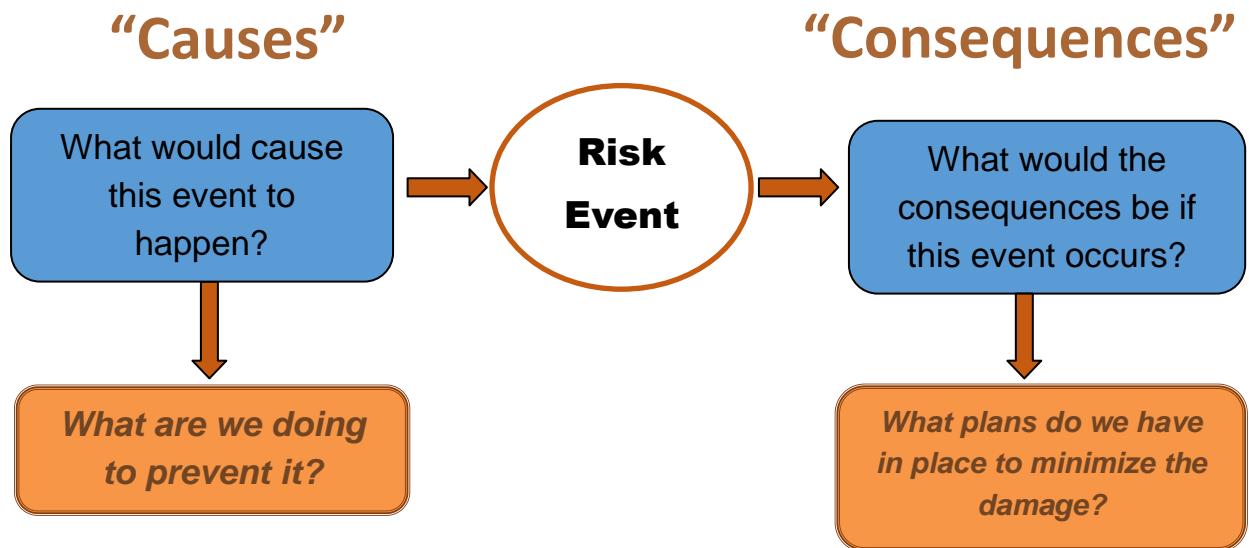
The ERM director began the ERM process by going to each of the senior vice presidents of the major departments of the Company to request participation in the development of the initial inventory of risks. Each senior vice president then selected one individual at the director or general manager level to represent them in the ERM function. After collecting all of the key people from each department, the ERM director organized a series of brainstorming workshops. Starting at the enterprise level and working down into the department level, the workshops focused on the major corporate risks. The workshop started with the scenarios that would be the most severe if they were to occur. Next, the workshop determined which scenarios would have the greatest likelihood of occurring. Finally, the workshop determined which scenarios would be more controllable by the Company. When this process was completed, the ERM director had a list of 14 major corporate risks that were spread out among all of the departments in the Company. For each of these risks, a person within the responsible department was named the risk owner and was given the responsibility of managing the risk. The risk owners continued to work under the senior vice presidents in their departments while also working with the ERM director to manage the risks. All of the risk owners collectively constitute the corporate risk committee, and each serve the ERM function in addition to the current position they hold in their respective departments.

## DEVELOPING KEY RISK INDICATORS

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The Company began developing KRIs as the ERM function matured and became more integrated with the operations of the Company. The goal was to develop metrics that would provide signals to alert management to increasing risk exposures or trends that could either present opportunities or threaten the achievement of corporate goals. The Company relied on data driven analysis to support its conclusions throughout this process, and organized its thinking by using a technique referred to as a “bowtie analysis” to identify the metrics that would be most helpful in predicting risk events.

The bowtie analysis (see illustration below) starts with the risk at the “knot” of the tie, and then describes the events or circumstances that may cause the risk event to occur, paying particular attention to root causes. Once those causes have been identified, the analysis then identifies preventive measures that could be implemented. At this point there could be an evaluation of the actual preventive measures that the organization has in place to determine whether additional measures should be put in place. The analysis then moves to the right to look at the potential consequences that would result after the risk event happens, and the plans the organization either has or should have in place to minimize the negative effects of the risk.



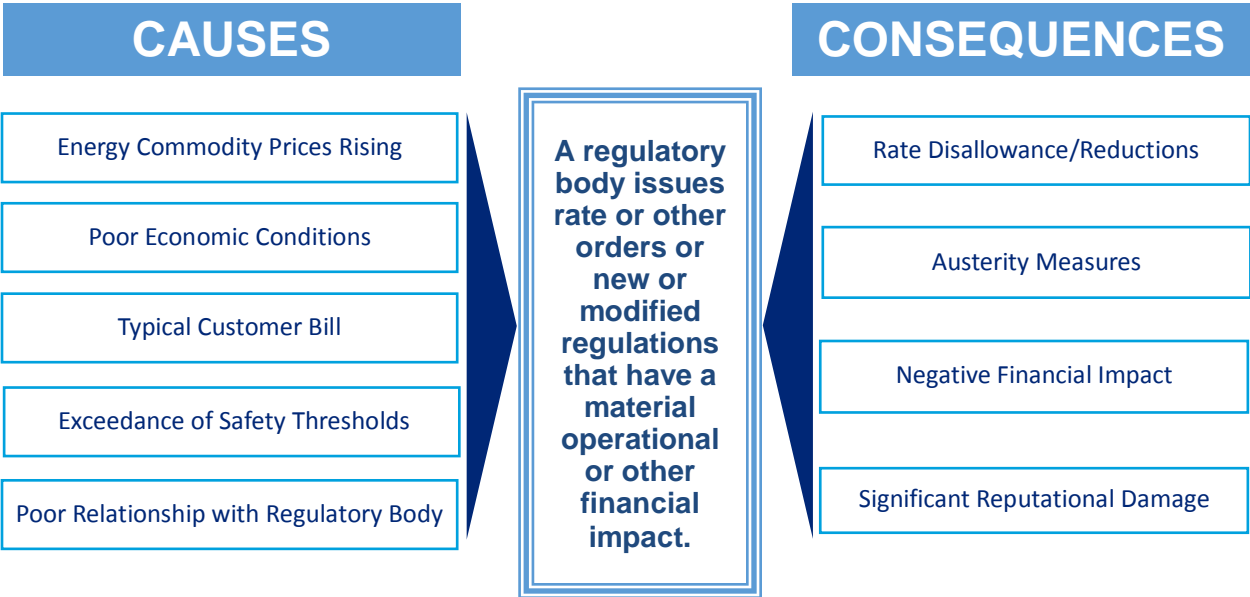
The root causes that have been identified in the box on the upper left of the bowtie analysis become the focus of the development of KRIs. With the goal being to identify metrics that track those root causes.

At the Company, the bowtie analysis was completed through a series of workshops organized by the ERM director. Each workshop included the risk owner as well as subject matter experts from each

department. These subject matter experts usually worked within the organization at the department level but also had experience dealing with issues affecting the Company at the enterprise level. The ERM director included subject matter experts to help create a setting which encouraged debate, but limited the number of subject matter experts to between 6 and 8 in order to keep the discussion focused. The ERM director believed that with the right combination of people and the appropriate level of preparation he could create the kind of atmosphere that would drive the creativity needed to identify the relevant root causes of the major corporate risks of the organization. Each workshop would last two to four hours, and depending upon the complexity of the risk the number of workshops needed to vet each risk could range from two to four. The ERM director found that these workshops had to be broken down into a series of meetings in order to be more effective due to the exhaustive nature of the approach.

Each risk owner was asked to pull together information on their risk in advance of the meeting in order to optimize time in the workshop. Once the cause events are identified, subject matter experts help the group by providing relevant information for each cause event. With that information in hand, the group can look more closely at potential cause events and discuss differences of, all of which sharpens the group's focus. The risk owners worked together to decode the root causes of the identified risks by discussing what combination of events would lead to the occurrence of each risk. Then, they seek to understand the issues which cause the event to occur. This requires the involvement of subject matter experts who are well versed in the fields relating to each identified risk. Next, they consider the potential consequences of the event. Then the Company reviews mitigation strategies that are either in place or need to be developed for each cause.

The following chart illustrates the analysis of regulatory risk at the Company. The risk is defined as a regulatory body issues rate or other orders or new or modified regulations that have a material operational or other impact. The bowtie analysis begins by identifying any causes for this risk. The causes identified are the price of energy commodities rising, poor economic conditions, the typical customers bill increasing, safety thresholds that are breached, or a poor relationship with the particular regulatory body. Then, the potential consequences of the risk are identified. These consequences are rate disallowances or reductions, measures for austerity, a negative financial impact on the organization, and significant reputational damage.



The causes identified in the bowtie analysis are then evaluated to identify predictive metrics that could be used as KRIs. The risk owners were asked to define one key data point which could be linked to each of the identified causes, and then gather three years of historical data on that data point. The ERM director at the Company found that the key component of this process is to develop KRIs that look at metrics in different ways. There should be at least one or two KRIs for each risk that go beyond pure numbers. The reasoning behind this strategy is that some KRIs are effective predictors but are not easily measured by numbers. These KRIs must be utilized in some way in order to effectively monitor the risk. The subject matter experts help to develop metrics which are then used to monitor each KRI. The process was made easier because the data for most risks was already being monitored either within the Company or externally. In the example given, “state economic conditions” is a metric that is measured externally by many independent sources, and this allows the risk owner a means to gather metrics for this KRI.

The ERM director then worked with the risk owners to set thresholds for each KRI. This often involved the finance department as their knowledge of risk management was critical. After viewing the historical information, thresholds were determined by the risk owners by selecting the data points where the KRI had moved into an area of more or less influence upon the risk. The thresholds are represented by three colors: red, yellow, and green. The green threshold represents an area where the KRI being measured is at an acceptable level, and no action is necessary in regards to the risk it represents. In the example given, the green threshold for “energy commodity prices” would be anytime the monthly ratio is below 0.9. When the KRI’s data point moves into the yellow threshold, it has moved into a cautionary area. This means that the KRI is communicating to the risk owner to look closer into the risk that the KRI represents. In the example “energy commodity prices”, this would be when the monthly ratio moves in between 0.9 and 1. When the KRI’s data point moves into the red threshold, the risk owner must consider action in regards to the mitigation strategies in place for that particular risk. For “energy commodity prices”, the red threshold represents when the monthly ratio moves above 1.

Next, the subject matter experts determine a weight for each KRI, and this is a scale of high, medium, or low. The process of determining the weighting is subjective based on the subject matter experts’ opinion of the influence of that factor on the likelihood of the risk occurring. The weighting of KRIs brings a more specific approach to monitoring the risk associated with them. Each KRI represents a trigger event which has a proportional impact on the likelihood of the identified risk occurring. For example, if a KRI like “energy commodity prices” with a high weighting, moves above the red threshold, it would make regulatory risk more likely to occur than if a KRI like “state regulatory success rate for prior 12 months” with a low weighting moved above the red threshold.

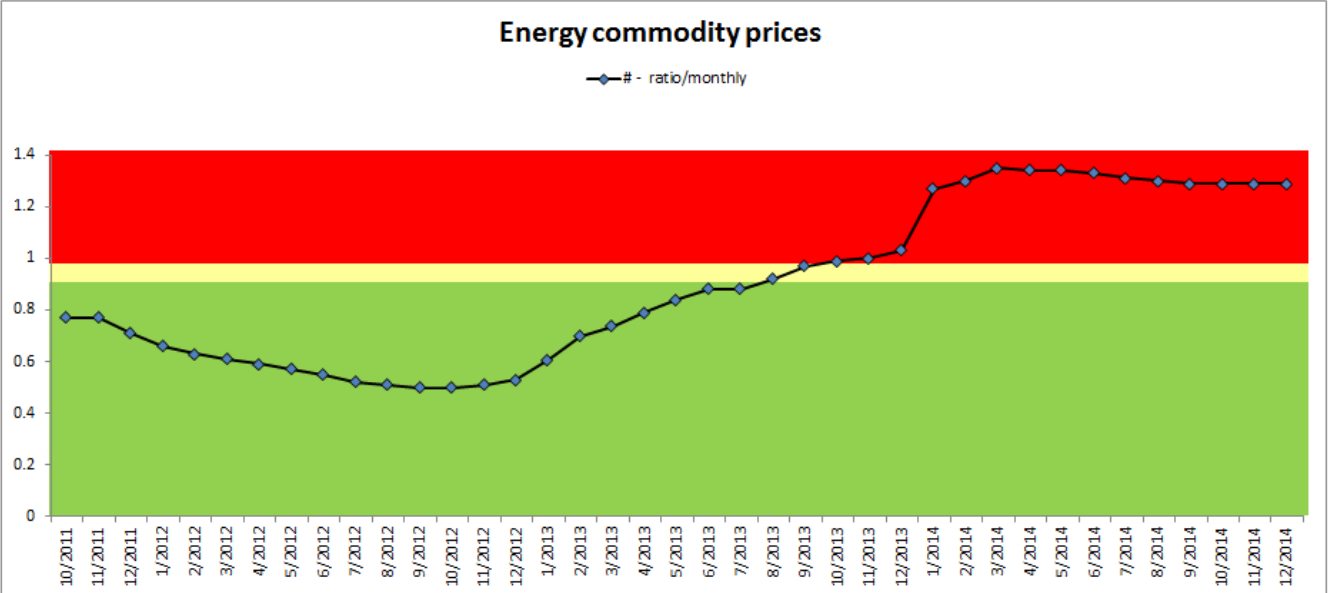
The result of this process for regulatory risk at the Company is illustrated in the table below.

Description	Measure	Goal	Thresholds	Weighting
Energy commodity prices	# - Ratio / monthly	N/A	Red: $x \geq 1$ Yellow: $0.9 < x < 1$ Green: $x \leq 0.9$	High
Typical customer bill	Ratio of 12-month average to 5 yr. average / monthly	N/A	R: $x \geq 1$ Y: $0.9 < x < 1$ G: $x \leq 0.9$	High
State economic conditions	Unemployment % rate / monthly	N/A	R: $x \geq 9$ Y: $7 < x < 9$ G: $x \leq 7$	Medium
Exceedance of performance thresholds	# per every 3 years / monthly	N/A	R: $x \geq 4$ Y: $1 < x < 3$ G: $x = 0$	Medium
State regulatory success rate for prior 12 months	% of success rate / monthly	70%	R: $< 25\%$ Y: 25-70% G: $\geq 70\%$	Low

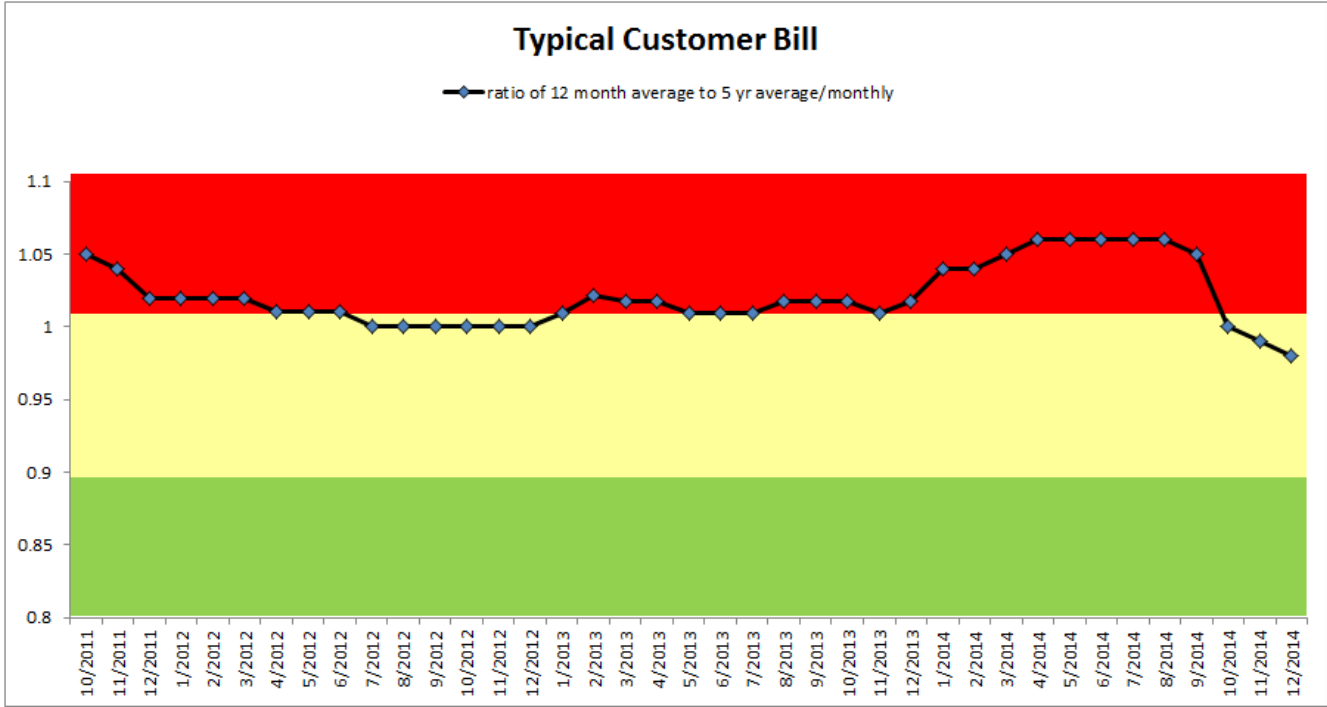


On the following pages, graphs of the metrics for three of the KRIs used for regulatory risk are shown.

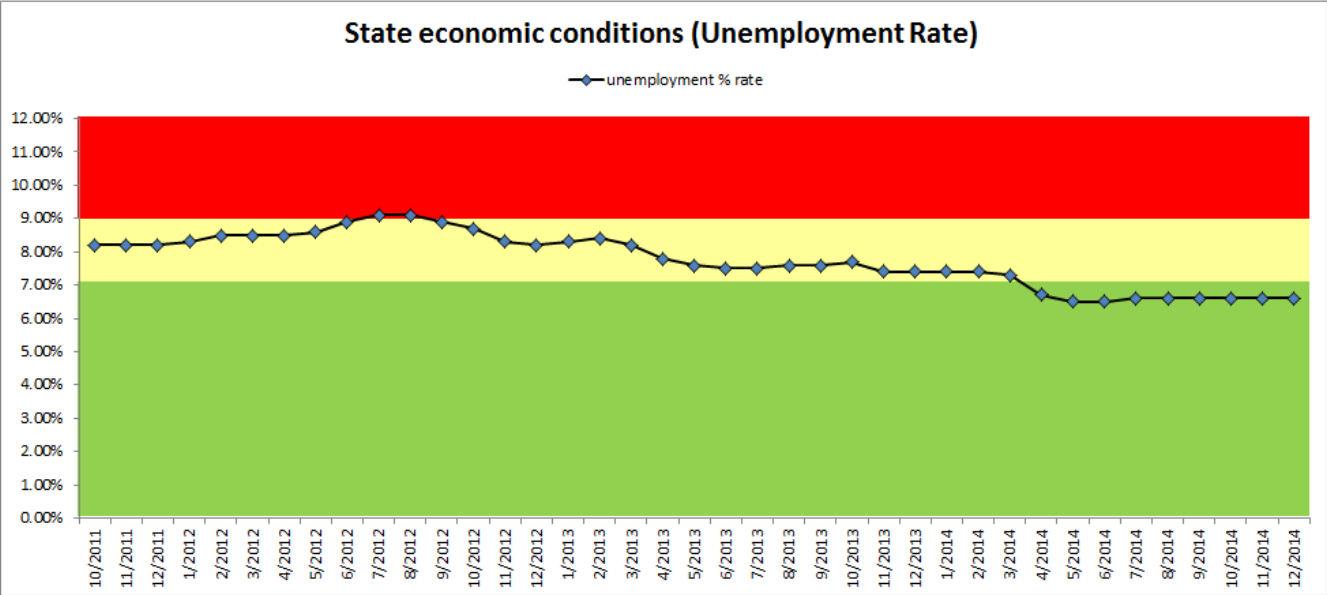
For energy commodity prices, a ratio showing the percentage change from the previous month is used and thresholds are set. Red is set at greater than 1, yellow between 0.9 and 1, and green at anything below 0.9 and the weight given is high. For example, a change in energy commodity prices above 1% would be reflected in the red area.



The typical customer bill shown below is tracked using a ratio of the average customer bill for the last 12 months compared to the average customer bill over the last 5 years. Thresholds are set for red at greater than 1 (12 month average has exceeded the 5 year average), yellow between 0.9 and 1 (12 month average is 90-100% of the 5 year average), and green at anything below 0.9 (12 month average is below the 5 year average by 10% or more). When compiling the overall status of Regulatory risk, the weight given to customer bills is high. The example shows that the 12 month average for the typical customer bill is between 95 and 100% of the 5 year average at December 2014. While this is still in the yellow or caution area, the trend is positive.



State economic conditions shown below are measured using the unemployment rate data taken from independent sources which monitor the economy of state. The red threshold is set at 9% which represents the unemployment rate, and when the KRI metric exceeds this threshold the risk owner is now aware that the likelihood of the occurrence of this risk has increased. The yellow threshold is set between 7% and 9%, and this communicates to the risk owner to monitor this risk closely because it is inside the cautionary area. The threshold for green is set for below 7%, and this communicates to the risk owner that the unemployment rate for the state is less than 7% and the KRI data point is within the acceptable range. When compiling the overall risk assessment, unemployment is assigned a medium weight in determining overall regulatory risk.



The final two KRIs that are used for regulatory risk are performance threshold exceedance which relates to reliability metrics and the regulatory success rates which relates to regulatory decisions. These KRIs are measured and monitored like the three KRIs discussed above.

## **MONITORING & REPORTING KRIS**







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After the development process has been completed, each risk owner has the responsibility of monitoring the risks belonging to the department in which he or she works. The monitoring process involves a continuous gathering of metrics relating to each KRI. While gathering these metrics, the risk owner must keep an open line of communication with the senior officer of the department in regards to how the risk is being managed. This dialogue includes mitigation strategies that are being implemented, the status of the mitigation strategies, and any plans for developing new mitigation strategies.

At the end of each quarter, the ERM director works with each risk owner individually and compiles a KRI summary dashboard for the risk in that risk owner's department. A comprehensive KRI report is prepared by compiling the KRI summary dashboards for all the 14 major corporate risks facing the Company. This report is distributed to the 45 senior officers of the Company, and provides a high level overview of each risk and the current status of the KRIs in relation to the risk. The report is organized in such a way as to allow each senior officer easy access to the KRI summary dashboards which directly relate to the department he or she manages.

The KRI summary dashboard contains metrics comparing the current quarter measurements against the previous quarter as well as the previous years' matching quarter. The metrics show the changes between the current quarter and the other two quarters in order to give the senior officers an idea of the direction in which the KRI is heading. The dashboard is organized as a chart that lists the risk owner, the risk, and each KRI along the top portion. Measurements for the three quarters are listed underneath each KRI for easy reference. The dashboard also includes a KRI overall color assessment, which is taken from the risk owner's KRI graph for that particular KRI. Underneath each KRI summary dashboard, a short narrative is provided that describes any changes in the colors of the KRIs. This summary describes the change, what specifically occurred to cause the change, and whether this change was an improvement or a setback. This narrative gives the senior officer enough information to be able to have a discussion with the risk owner in regards to any actions which may need to be taken to address the status of the KRI. These discussions occur regularly between the risk owner and the senior officer, so if there is any unexpected change the narrative will be descriptive enough to inform the senior officer of why it occurred.

Below is an example of the KRI summary dashboard for the regulatory risk:

KRI's	High		Medium		Low	Overall Risk Assessment
	Energy Commodity Prices	Typical Customer Bill	State Economic Conditions	Performance Threshold Number of Times Exceeded in Last Year	Advocacy Success Rate Regarding Regulatory Issues	
Regulatory Risk						

In this example, the prices of energy commodities are given a high weight, therefore if this KRI goes into the red threshold it signals that the likelihood of the risk event occurring has significantly increased. In the Regulatory Risk row, the boxes for each KRI will be filled with the color in which it is plotted on the graph. Thus, the senior officer is alerted to the situation and will have a discussion with the corresponding risk owner to discuss what mitigation strategies are in place and how they can be adjusted to decrease the KRI to an acceptable level or begin to prepare the organization for the risk event.

The ERM director at the Company understands that some KRIs are within the organization’s control and some are not. The reason for employing KRIs is to help determine whether the mitigation strategies being employed by each department for managing risks are effective. The ERM director does not own the risks being managed, but they do own the process of managing the risk. This is essential to the success of the process, and the team continuously monitors the effectiveness of KRIs. They do this by meeting quarterly with the corporate risk committee and challenging the data being presented to them by the risk owners from each department.

## **SUMMARY**

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The Company effectively uses Key Risk Indicators to monitor the 14 major corporate risks that face the organization. The process started by identifying the causes to these major risks by using a bowtie analysis. The ERM director then employed an efficient process that enables the risk owners from each department to apply measurable metrics to each of these KRIs. Each KRI was then monitored quarterly using graphs to display those metrics in an easy to follow way. A good analogy to use for the monitoring function is like a “check engine” light on a car. When the light comes on, the driver is notified that there is a problem that must be tended to. These graphs which monitor the KRIs work in a similar way at the Company: they allow the risk owners to see if there is a problem that needs tending to in regards to the major corporate risks. The role of the ERM function with regards to KRIs at the Company is that they are facilitators of this process, while it is the responsibility of the risk owners to manage the risks in their respective departments. The reporting process actively engages senior executives by providing key information on KRIs which trigger a review and may lead to potential change to current mitigation strategies. The Company has a robust ERM function in place, and the development, monitoring, and reporting of KRIs has given them a valuable tool in managing their key corporate risks.

# Case Illustration #2: Wimbledon Investments

## OVERVIEW

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This case study investigates an investment company with divisions all over the world. Over the past several years, the company has benefitted from utilizing key risk indicators (KRIs) to manage its risk. The enterprise-level risk committee has worked with the Chief Executive Officer (CEO) to identify three key strategic principles. Risk events to those principles were identified by the enterprise-level risk committee and the root-cause analysis was used to develop KRIs for the events. The company also relies heavily on data and predictive modeling to plan for future business performance. This study found that the company benefitted most from the use of KRIs when the risks were uncontrollable and when the KRIs were directed towards the risks from new investments the company was considering on-boarding.

## COMPANY BACKGROUND

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Wimbledon Investments (WI) is a leading investment and financial services company based in the United States with investments across the globe, but focused primarily in the United States, Canada, and Europe. WI has been in business for over 50 years and has survived numerous market downturns including the most recent global financial crisis. The Company had assets valued at approximately US\$100 billion at December 31, 2015.

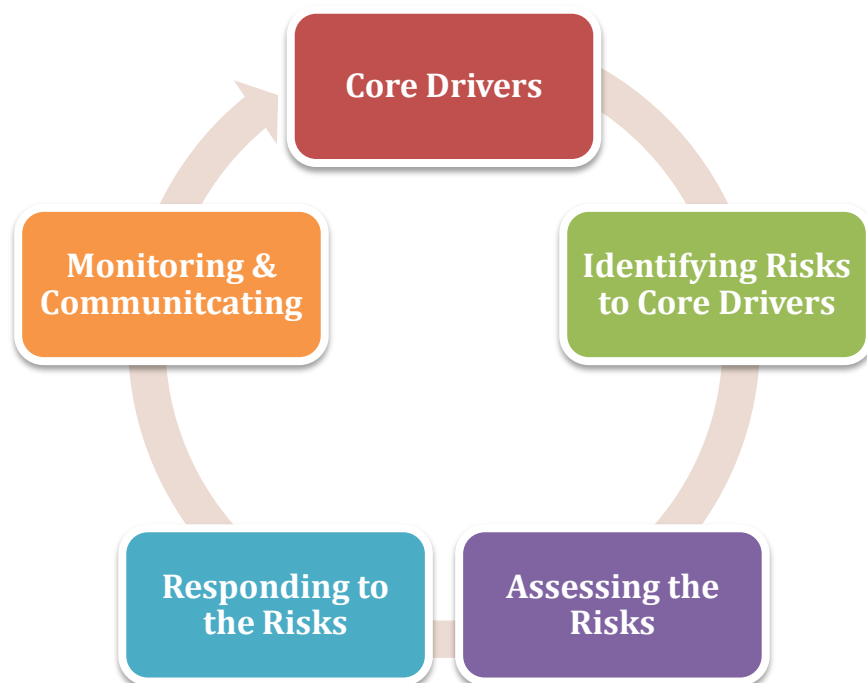
A significant portion of WI's business consists of investments in mortgage loans. The company focuses on maintaining a diversified portfolio of mortgage investments and tries to be forward-looking when assessing the risks of investing in particular markets. One of the challenges for any international company is to design an effective Enterprise Risk Management (ERM) program that is common across all of its global businesses, yet is flexible enough to work in different environments. The markets in these different areas around the world may act and are regulated differently, which is why an ERM program cannot be too rigid. WI's strategy for making investments in new markets has been to look for areas with growing home ownership, a solid legal and regulatory framework for mortgage lending, and people who are home ready. It believes that this strategy has contributed to the company's successful growth and performance.

## ERM PROCESS

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The ERM process at Wimbledon Investments is relatively mature. The majority of the ERM process is implemented by the Executive Management Risk Committee, which consists of the heads of each business as well as several executives. This committee identifies the company's core drivers and what risks may affect those drivers. One of the ways the committee achieves this step is by relying heavily on analytics. It then assesses the risks by taking into consideration the likelihood and impact of those risks. The committee then classifies the risks as high, medium or low and responds accordingly by reducing the risks to within the company's risk appetite.

Another key component of the ERM process is monitoring and communication, which is performed on a continuous basis throughout the organization. In addition, risks are also reassessed as a part of the company's annual business planning process. During the business planning process, the Executive Management Risk Committee assesses its investment portfolio and prepares three to four year forecasts of changes expected in its portfolio and in the markets in which it invests. The committee then creates three to four scenarios with increasing stress to evaluate the events that may happen and how the portfolio would be affected. The committee also assesses the probability of these events happening. To understand how the business will be affected by deeper levels of stress, the committee will run a deep downside scenario analysis looking at economic capital along the probability continuum. The Executive Management Risk Committee will then present its findings to the Board Risk Committee and gain approval over its risk appetite and tolerances. Wimbledon Investments' ERM process helps to ensure that the company remains vigilant as risks are constantly changing. Below is an illustration of WI's ERM process:





The responsibility for oversight of the ERM process resides with the Board because it is the Board’s role to ensure that management is making decisions with the appropriate balance of risk and reward. The Board Risk Committee was created to assist the Board of Directors in its risk oversight responsibilities. Some of these responsibilities include operational risk, market risk, housing risks etc. The Board Risk Committee annually reviews and oversees the implementation of WI’s risk management policies and approves the company’s risk appetite and tolerances. It also reviews WI’s ability to assess and manage significant and emerging risks.

WI’s Corporate Chief Risk Officer (CCRO) is appointed by and reports to both the Board Risk Committee as well as the CEO. The CCRO chairs the Executive Management Risk Committee and is the management liaison to the Board Risk Committee. As such, the CCRO regularly attends meetings of the Board Risk Committee. Reporting to the CEO are the heads at each of the United States, Canada, and Europe business units. Each business unit has a business-level Chief Risk Officer (CRO) that reports directly to the business head and indirectly to the enterprise-level CCRO. Each business unit also has an ERM Team that includes an ERM Lead and Analytics lead, reporting directly to the business-level CRO. Below is an illustration of the company’s reporting line:



## DEVELOPING KEY RISK INDICATORS

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### The Foundation for Developing KRIs - 3Cs Principles

As a starting point in developing KRIs you must first look at the fundamentals of the business model and how that affects risks. When evaluating the source of risk in a loan, there are three fundamental principles that must be observed. Some businesses call them the 3Cs, and WI has incorporated them into its ERM program. These underwriting principles are a good way to think about the risks to an organization that invests in mortgage securities.

**Capacity:** The first hurdle for WI is the capacity of the borrower and ultimately the company's portfolio. This principle can be expressed through the question "Does the borrower have the ability to pay back the loan?" If the borrower makes \$900 per month and the mortgage is for \$1000 per month, the company knows that the borrower does not have capacity. But if the borrower makes \$2000 per month, the transaction may be possible. Therefore, the company evaluates potential mortgage investments for sufficient capacity. One metric that WI uses to monitor the capacity of the borrowers in its portfolio of mortgage securities is Debt to Income (DTI). Therefore, the question for developing a KRI could be, "What event(s) could have a significant impact on the Debt to Income ratio across my portfolio?" and "What is the earliest indicator that such an event or events is starting to occur?"

**Credit:** Once the first condition is met, the next step for WI is to look at credit. This principle asks, "Is the borrower willing to pay back the loan?" Some borrowers may satisfy the first principle and have the capacity to pay, but they don't pay their bills on time or they don't manage their finances very well. These types of habits can be reflected in a borrower's credit score, and ultimately in the company's investment portfolio. Credit scores are easy to obtain and the company has found them to be very predictive of default. The scores may also show the company if the borrower has any liabilities that have not been disclosed, because most loans in most mature markets will show up on a borrower's credit report. The company's portfolio risk increases as its borrowers' credit scores decrease. Therefore, WI may develop a KRI by asking the question, "What event(s) may decrease borrowers' credit scores?" and "What indicator will precede such an event?"

**Collateral:** After WI has confirmed the borrower's credit position it will assess its collateral. If the borrower defaults on the loan, the first step would be to work with the borrower to try to remedy the situation through a loan workout process. If this process is unsuccessful, the property securing the mortgage would likely be sold to recover the value to pay off the loan. One of the key measures of involving collateral is the Loan-to-Value (LTV) ratio. The LTV ratio is a key measure that banks and mortgage lenders use that describes the relationship between the loan amount and the value of the property. A higher LTV will mean that there is less equity in the loan, which makes it riskier. Some loans may have a 95% LTV, which means that the borrower only made a 5% down payment. These loans are

viewed as highly risky in WI’s portfolio. The hazard with a high LTV loan is that a borrower’s equity may quickly erode if payments are missed and in that case, the borrower may face a high likelihood of losing the home to foreclosure. When the borrower finds himself in this situation, there is little incentive to invest time and resources into the maintenance of the property. As a result, the value of the property may go down potentially increasing the loss on the mortgage loan. However, a mortgage with an 85% LTV allows the company to have a 15% cushion. If the borrower does not make his

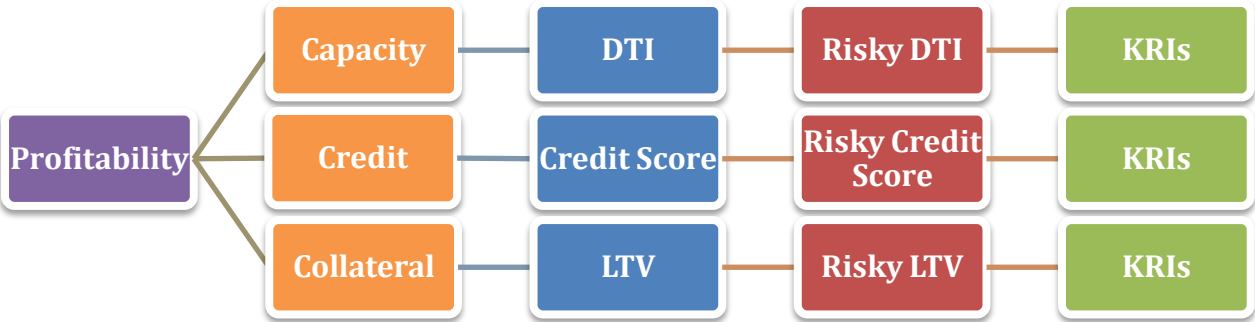
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*“When evaluating the source of risk in a loan, there are three fundamental principles that must be observed.”*

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payments, WI will have more cushion to recover the value needed to pay off the loan. Therefore, WI would use LTV to develop a KRI by asking, “What would increase our portfolio’s LTV?” and “What indicator could show when LTV is about to increase?”

Documentation may also be added to these principles. Although it does not relate to KRIs, all of the three above steps rely on good documentation by the company and by the loan originators. The 3Cs underwriting principles have been used for many years and were implemented long before the global financial crisis of 2007. Even so, one can easily map deficiencies that resulted in the crises to one of these three key principles. For example, some mortgage investors had purchased 100% LTV loans, which were very vulnerable to potential losses in the event of a market decline. If WI can develop KRIs that are tied to these 3Cs, the company might mitigate its exposure to a risk event in the future. Below is an illustration of how Wimbledon Investments linked its objective to strategies to risks and ultimately KRIs:



## Credit Default Risks & Leading Indicators

As demonstrated, the risks to mortgages and credit default may all tie into the above 3Cs principles. When WI asks itself, “What event might change one of the 3Cs?” it generally identifies several risk events. These risk events may be divided into controllable and uncontrollable risks. Controllable risks are managed differently than uncontrollable risks in that analytics and multiple dashboards are used to evaluate the risks present in each new investment that the company is on-boarding. Uncontrollable risks have a greater effect on loans that the company has already invested in, which is where KRIs can be particularly effective.

**Controllable risks:** Controllable risks are managed on the front end of business decisions to decide whether or not to take certain risks based upon limits that have been put in place.

1. For capacity, the lender can make sure that it has reasonable DTI by putting a cap on the measure of, for example, 45%. The company can monitor and manage the loans that are coming so that they don’t exceed this metric.
2. For credit, the company may look at its portfolio to see how many loans are coming in below a certain threshold. It may also look at the average and see how it is moving up and down.

For collateral, the company may put a cap on LTV and say it wants 95% maximum and 90% average for its portfolio. To monitor these controllable risks, the company uses multiple dashboards and analytical data. When a measure is triggered, it forces a refreshing of the company’s analysis and an escalation to higher committee levels. However, the company realizes that its geographical diversification allows it to experience stress events without always having to create a deviation from its business plan.

**Uncontrollable risks:** Even if WI has all three principles in place, there are many factors in the mortgage industry that could influence its risk position. The company cannot control macroeconomic shifts, but it can prepare itself to be more agile and resilient when these events do occur. This is where risk indicators can be very effective and useful. To monitor the macroeconomic environment, WI may look at indicators such as Gross Domestic Product (GDP) growth, interest rates, unemployment, and inflation. To monitor the housing environment, the company may look at mortgage originations, home price appreciation, affordability, and housing supply and demand. All these indicators may cause changes in a portfolio’s 3Cs principles.

**Controllable risks of new investments:** High Debt-to-Income, Low Credit scores, and High Loan-to-Value.

**Uncontrollable risks managed by KRIs:** Low GDP, Low Growth rates, High Interest rates, High Unemployment, and High Inflation.

To manage collateral in the company's portfolio, WI may look at leading indicators such as home prices. With an 85% LTV, the company has a 15% cushion that could protect against losses. However, if the value of properties depreciates by 20%, that cushion no longer exists. The company may still avoid a loss if borrowers still have the ability to pay (capacity) and the willingness to pay (credit). But if two out of the three principles change negatively, then the company will have to take action in managing the risk. If the property appreciated since the company on-boarded the investment, and unemployment increases, the company might still be safe because there's plenty of cushion on that loan's collateral. Therefore, there is a constant interplay among these indicators, and WI carefully monitors all three.

### **WI's Risk Indicator Philosophy**

The company continues to refine its process to identify those KRIs that best predict future performance. WI periodically assesses the performance of its portfolio to identify variables that are more predictive of future performance. In some cases, this may result in the development of KRIs, and in other cases it provides information that will guide future decision-making around investments. Analytics are critical to both monitoring existing risks as well as minimizing the risk profile of the company in the future.

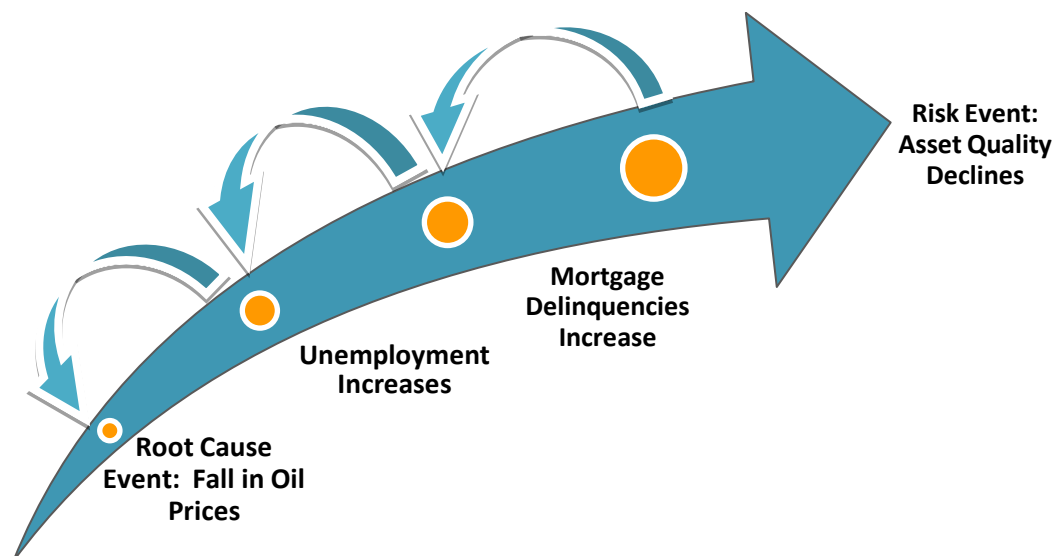
In the past, WI simply established trigger levels related to the key drivers of each significant risk, and if the trigger level was reached the company would take action according to a defined action plan for that risk. Over time, WI realized that this process was too mechanical and automated. It decided to focus on creating a more proactive approach to risk oversight and management so that the process shows a continuous evolution of approaches. For WI, the goal is to be able to show that the business has been monitoring the risk before any metric was triggered. Negative trends should be talked about and discussed at regularly scheduled risk review meetings, before it escalates to a trigger point. The company still relies on the required action plans when metrics are triggered, but now it also has incorporated qualitative measures into its ongoing risk oversight process. Every month, the CRO of each business will review its portfolio and document some qualitative analysis which he communicates to the business unit head and the enterprise level CRO. This step gives the business unit CRO an opportunity to communicate the positives and negatives regarding the level of risk the business is taking on. It also gives the CRO an opportunity to step away from the metrics and to voice his concerns early, so that they are talked about long before any metrics are triggered. Therefore, WI includes these qualitative measures as leading indicators for the company.

## Examples of KRIs

The company has several supply and demand metrics that help predict the increasing risk that the market is about to correct. WI looks at six specific indicators for the housing environment. If one indicator is triggered, it doesn't mean that the market is melting down, but it does force the company to assess the risk. The company uses many statistics to indicate when there is a problem. In many markets there will be one indicator going off, but if there's two or three that trigger, then the company will have higher escalations and reviews of the situation.

WI has built many sophisticated leading indicators for its uncontrollable risks. One of WI's six leading indicators for the mortgage industry is oil prices. The company identified this indicator when it asked itself, "What uncontrollable event might affect the capacity of borrowers in the markets where we have made investments?" It realized that when unemployment was high, borrowers may not have the income to pay their mortgages, resulting in potential losses for WI. Therefore, the company asked itself, "What is a leading indicator of when unemployment is about to rise in each of the markets where we have made investments?" To evaluate unemployment, the company first identified the largest employers or most significant industries in each area where it had investments. In one area, the economy was very dependent on the oil and gas industry. WI realized that when oil prices decline, oil companies may react by laying off employees which would affect not just the oil company's employees but also the broader economy in that area. These actions would not only affect the borrower's ability to pay but also could have cascading effects on the value of property in that area, increasing the LTV ratios.

On the other hand, if the same area experiences an increase in oil prices, it could improve the borrower's capacity to repay as well as increase property values. The process is illustrated below:



Therefore, the company strives to get as far down as it can into the root-cause event that would ultimately affect its three principles. In this example it was oil prices. The company focused on both current and forecasted oil prices and considered the potential impacts on its existing portfolio as well as its future investment strategy. The company went through a similar exercise for each area where they had a concentration of mortgage investments to identify the largest employers and the industries upon which those employers were dependent. The company found that the best way to discover such leading indicators was to engage the people in its organization that were on the ground and had detailed knowledge of the key economic drivers in each region. That is why each of the company's businesses has a CRO that understands and monitors the local market.

Some investors have searched for measures that would predict a decrease in new business for the area because a decrease in new business could be an early warning sign of a decline in existing business and employment. They discovered that by monitoring the number of shipments coming into the area, they could predict business activity. If there was a decline in scheduled shipments coming into an area it was a sign that business activity was slowing and therefore the workforce would no longer be growing, thus there would be less demand for mortgages which would result in a potential decrease in the capacity of existing borrowers to meet their loan obligations. On the other hand, this

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*“Therefore, the company strives to get as far down as it can to the root-cause event of what will ultimately affect its three principles.”*

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leading indicator may also be turned around and used to predict future opportunity events by monitoring an increase in number of shipments coming into an area. In another area where WI has a concentration of mortgage investments the dominant industry is mining and the KRI is China's economy. Similar to the oil manufacturing example, the company recognized that the health of the mining companies was crucial to the continued employment of the borrowers in this area. The company then asked itself, “How can we predict when mining companies will experience a downturn?” Going further down the chain, WI determined that mining companies in the area were highly dependent on exports of raw materials to the Chinese market, and therefore it could predict a decline in demand for raw materials when China's building infrastructure slowed down. Therefore, WI began monitoring the Chinese economy, which ultimately would affect WI's mortgage investments in the area.

Supply and demand metrics within the housing markets is another indicator that the company may use. Stockholm, Sweden is a very robust market and property values are high and on the rise. The company believes that the area is landlocked meaning there is nowhere to build but up, which is why a lot of condominium prices are going up. WI may do a lot of scenario analysis on an area like this looking at several leading indicators. It may assess how many units are coming online and how many units will be built in coming years. It may look at what the demand is now and what borrower income levels are relative to condo prices. These indicators will help the company predict the risks of incurring losses on investments in the area and ultimately in its portfolio.

## **SUMMARY**

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WI uses a significant amount of data and predictive modeling in monitoring both controllable and uncontrollable risks. It constantly analyzes data and trends looking for an edge on any variable that may help the company predict business performance in the future. It may take months or even years for WI to realize whether a certain mortgage investment was a good or bad decision. Therefore, the company believes that the more important part of its business is to make sure that the quality and profitability of new investments are sound. Where KRIs have been most helpful for the company is when they are used to manage uncontrollable risks. WI uses the root-cause analysis to tie indicators of risk events to the 3Cs principles that will ultimately determine the risk position of the company's existing portfolio as well as help to shape the strategy for making new investments. In this way, WI seeks to use risk indicators not just for the risks in its existing portfolio but also to be more forward-looking as it seeks out new investments.



# Case Illustration #3: Discovery Health Group

## OVERVIEW & COMPANY BACKGROUND

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This case study examines the key metrics used by a health insurance company to monitor and report on its key risks. Discovery Health Group (DHG) is a private healthcare insurance company, headquartered in Dover, Delaware with offices around the eastern part of the United States. The company has been in business for over 60 years, currently insures over 157 million people, and has reported revenue of over \$10 billion. The majority of their income is spent on claims and medical expenses, and the remainder is spent on improving its technologies and customer service. Some of the company's core product and services it provides include Government Health Programs (GHPs) and Private Health Coverages (PHCs). The company's business core drivers include improving the well-being of its customers, trying to have stellar customer service relationship, and being more of a consumer focused when it comes to solving healthcare problems.

## ERM PROCESS

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The process of building out the ERM function at DHG began in 2008. Since then, the organization believes their ERM process has gradually gained greater acceptance at all levels of the organization. DHG believes that maintaining an ERM framework is critical for the long-term success and sustainability of its ERM process.

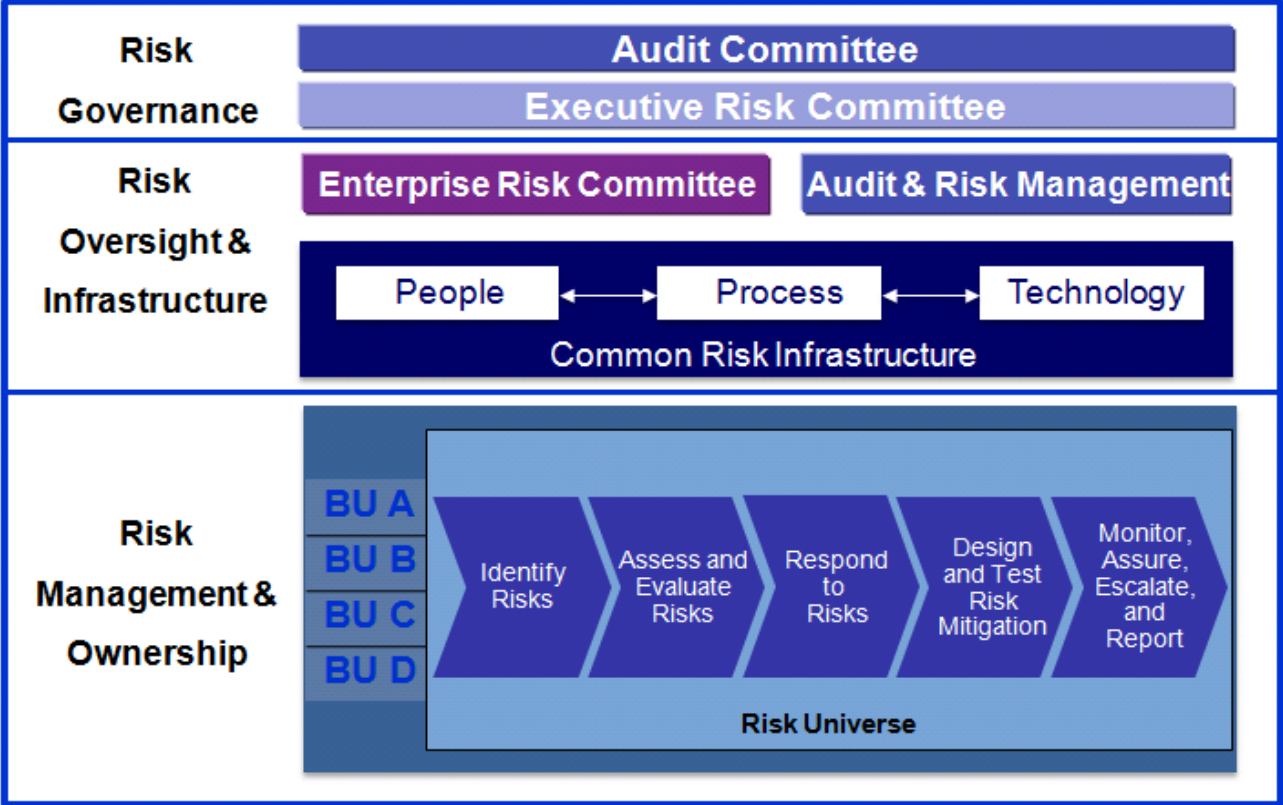
According to the ERM Framework developed by DHG, the organization begins by developing and deploying a risk strategy. The overall risk strategy is connected to individual risk objectives that pertain to each area of the organization. The following defines the roles of each participant in the ERM process:

- **Risk Governance:** Composed of the Audit Committee, the Board of Trustees and the Senior Leadership Team (SLT).
- **Risk Oversight:** Composed of the Enterprise Risk Committee (ERC) within Audit and Risk Management (ARM). The ERC is responsible for ensuring the ERM process is effectively executed across the organization. ARM collaborates across silos and communicates cross-departmentally to ensure risk response plans have been implemented and are effectively operating.
- **Risk Infrastructure:** Consists of competent individuals with proper training, effective risk management procedures, and appropriate technology to analyze and communicate risk exposures.
- **Risk Management and Ownership:** Consists of business unit leaders (risk owners) accepting responsibility for managing risks within their control in the risk universe.

The objective of the ERM framework, depicted below, is to sustain and continuously improve the effectiveness of the ERM function at DHG. The ERC is responsible for developing enterprise wide

standards to support the ERM framework. Additionally, the ERC ensures that risk is managed both holistically and by the individual business units.

**DHG’s ERM Framework**



DHG employees are encouraged to follow certain key Enterprise Risk Management Steps. These steps are typically communicated through ERM workshops. All individuals in leadership/management positions are required to attend informal training on risk mitigation and ERM fundamentals. The following steps are included in the organization’s ERM process:

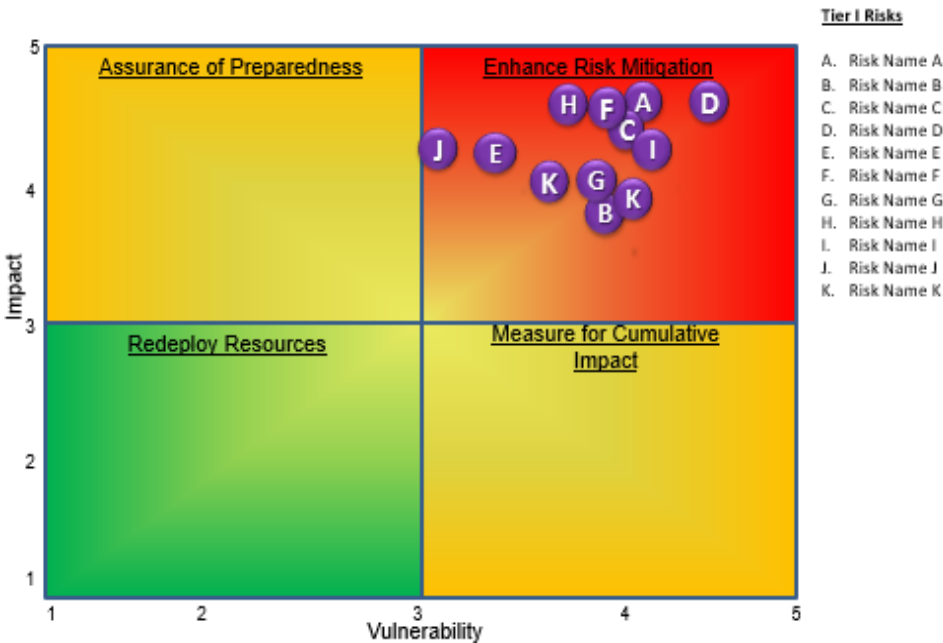
- **Identify Risks:** Understand what could prevent a department from achieving the corporate goals
- **Assess and Evaluate Risks:** Understand the impact of risks and provide key information for cost-effective decision-making
- **Respond to Risks:** Understand and prepare for circumstances impacting risk response
- **Design and Test Risk Mitigation**
- **Monitor, Assure, Escalate and Report:** Provide management with a comprehensive view of business unit risks

Each business unit has a risk owner responsible for ensuring that ERM plans are properly established and operating as intended. Risk owners are accountable for developing relevant success measures,

strategies that mitigate, respond to, and track identified risks. The ERM team collaborates with the risk owners through this process. The responsibility to identify risks resides with each business unit. To identify risks, DHG holds routine brainstorming sessions which include individuals from cross-functional areas of the company. These sessions start with business objectives and look at potential risk events that would impact the achievement of objectives. Risks identified through these sessions are then assessed based on the residual vulnerability and impact and categorized into common themes. Senior management and certain employees below senior manager provide input into the risk assessment. Using the input from the assessment process, DHG classifies risks into tiers with Tier 1 being the most important. The company currently has 11 Tier 1 risks, 8 Tier 2 risks, and 37 other risks in its risk inventory.

Tier1 risks are routinely re-evaluated and plotted on a MARCI chart. The MARCI chart (for Mitigate, Assure, Redeploy, and Cumulative Impact) plots risks along the two axes of impact and vulnerability and indicates each risk’s speed of onset by the size of the data points. The chart particularly useful when the primary purpose of the prioritization exercise is to highlight those risks for which an appropriate risk response is most needed. Risks plotting the farthest in the upper right quadrant represent the highest impact and vulnerability and would benefit the most from additional management effectiveness in managing the risks. Tier 2 risks are managed at a slightly less robust level,

**DHG MARCI Chart - Tier I Risks**



and Tier 3 risks typically do require the attention of the ERM team. The tier three risks are still in the risk universe managed by business units, but they are not brought to the attention of the ERC unless they subsequently arise to tier 1 or tier 2 status.

The ERC provides oversight of the process across the organization. To carry out that oversight the ERC is composed of members representing each functional area of the organization. Specifically, the ERC monitors and provides feedback and direction on the risk and mitigation information provided by the risk leads. The ERC Chair provides semiannual reports to the Senior Leadership Team (SLT) on the status of the ERC’s

activities and updates on significant /topical risks. A topical risk issue that the ERC can bring up to the SLT could be the possibility to update or calibrate a risk from a tier 2 to tier 1 risk. The Senior Leadership Team is comprised of Senior Vice Presidents from each division and is reported to by the ERC two times annually. In this reporting process, the primary focus of the ERC is those tier 1 risks that pose a potential enterprise-wide threat to the company.

The ERM function at the company is a part of the Audit and Risk Management Department along with the company's Internal Audit Function. The ERM team has found success in monitoring the risks facing the organization through its association with the Internal Audit Team. This link allows the organization to improve its assessment of mitigation strategies with regards to individual risks being managed by risk leads. An example of this would be the outsourcing of certain functions of the operations of the company to external vendors. Since the company needs to have the assurance that the risks inherent in vendor outsourcing are managed effectively, the company uses its internal audit function to assess the controls of those vendors. Also, the vendor management function is audited to determine the effectiveness of overseeing the company's managing of relationships with vendors. During this audit process of vendor management, information received from the Internal Audit team by the ERM team prompted the discovery that risk mitigation strategies needed to be reviewed and revised to better handle the risks involved with outsourcing operational functions to vendors. The internal audit function was able to communicate this to the ERM team, who in turn worked together with the risk leads and the ERC to develop increased and improved risk mitigation activities to better manage the risk.

However, the ERM team is not always involved in the decision-making process from the beginning. In some cases, after the decision has been made to launch a significant enterprise initiatives, the ERM team may assist the business unit management in completing the ERM steps to increase the likelihood of success in accomplishing the initiative's objective.

## RISK REPORTING & KEY RISK INDICATORS

When reporting on key risks, the company will identify risk owner, success measures, mitigation strategies, a risk score, documentation of Key Risk Indicators (KRIs), and accumulation of any other relevant information to manage risks. This process begins with individual business unit risk leads identifying those significant risks.

The development of KRIs occurs in tandem with the reporting of key emerging risks expressed above. The difference is the KRIs associated with those risks are developed, documented, and presented to the ERC but are not reported on the company's ERM Dashboard. What goes on the ERM Dashboard are only the risk description, success measures, risk scores, and mitigation strategies. The success measures are the high-level objectives and outcomes that would demonstrate that the risk is satisfactorily mitigated and opportunity optimized.

These reports begin with a risk description which details the risk and what it involves. The next item is the background of the risk, which discusses the root causes and consequences involved. The report also includes success measures and the mitigation strategy.

**DHG ERM Dashboard – Tier 1 Risks**  
**1<sup>st</sup> Quarter 2015**

**Risk**  
\*\*\*\*\* TIER 1 RISKS \*\*\*\*\*

Risk Name: \_\_\_\_\_  
Risk Lead(s): \_\_\_\_\_ Risk Category: \_\_\_\_\_

**Risk Description**

**Risk Scores Per the Most Recent Risk Assessment**

Impact	Likelihood	Vulnerability

**Success Measures**

**Mitigation Strategy**

**Risk Legend - Impact of Mitigation Strategy**

- Limited degree of preparedness to prevent or respond to risk
- Moderate degree of preparedness to prevent or respond to risk
- High degree of preparedness to prevent or respond to risk
- New Risk. In the process of obtaining information

For example, a health care company like DHG can face regulatory risks, which can change its business environment. An increase in regulatory oversight and control could result in undesirable changes to DHG's business model, increased costs or otherwise adversely affect the company's ability to conduct business efficiently. When this risk is fully versed, discussed, and agreed on to be a tier 1 emerged risk, the ERM team adds it on the Dashboard.

Secondly, the ERM team engages the risk lead in determining success measures for the optimal management of the risk. The success measures are the high-level objectives and outcomes that would demonstrate that the risk is being satisfactorily mitigated and the opportunity optimized. The ERM Team seeks to have management define quantifiable success measure statements, but will allow qualitative statements. With respect to regulatory risk, a simple qualitative success measure statement could be: Regulatory requirements that could be problematic onto the company's strategy, business performance, or ability to implement are avoided or kept to a minimum. Essentially, the success measures for all risks help establish and align the risk mitigation strategies in place or planned by DHG to manage the risk exposures or opportunities they present.

The report next focuses on risk mitigation strategies being employed for the risk. The mitigation strategies include current and proposed mitigation strategies. The strategies are listed in rank order starting with the most impactful mitigation strategy. Each risk mitigation strategy has a detailed description of the strategy, a high-level action item to implement the strategy, the status of the strategy, and an impact statement that corresponds to the risk. The purpose of the status is to show whether or not the strategy to combat a risk is actively being employed. When mitigation strategies simply are not reducing the risk impact or likelihood, the risk lead informs the ERM Team and, at times the ERC. In this situation the risk lead will typically be advised to develop additional or revised mitigation strategies as well as facilitate reporting the risk exposure to the Risk Governance level (i.e. Executive Risk Committee and Audit Committee).

While the company has developed Key Risk Indicators (KRIs) for its tier 1 risks, it has not yet incorporated KRIs into its ERM dashboard reports. The ERM Team began developing the KRI concept for usage in the DHG enterprise risk management processes in 2011. The ERM Team worked with the Tier 1 Risk leads to identify and incorporate KRIs into their ERC presentations beginning in 2012. The KRIs in the ERC presentation are specific to each risk, however there is not a formal process surrounding their development. The ERM Team facilitates consultative meetings with the Risk Lead and other subject matter experts engaged by the Risk Lead to identify suitable KRIs. The ERM Team advises the Risk Lead to self-report the available KRI information along with other factors/sources of information that management may be using to intuitively 'know' when the risk is increasing/decreasing/holding steady (i.e. the basis for management's "gut" feeling). The majority of the KRIs used by the company are not

quantitative and are subject to the judgment of the risk lead in the impacted business areas. An example of a KRI related to regulatory risk would be tracking key elections. This would include monitoring the candidates running for influential positions of government at the state and federal levels, each candidate's stance on various health care issues, the candidates' popularity among voters, and viability to be elected to the office. Another KRI could be monitoring external surveys and information sources that highlight consumers' issues on health care consumption and needs as compared to the company's stance, policies, or procedures.

The reporting of KRIs to the ERC has been limited to the self-reporting done by the Risk leads. DHG is working towards having a more formalized, transparent process to allow the ERM Team, the ERC, and management beyond the Risk Lead's business area to gauge the movement of the risk and the effectiveness of the associated risk mitigation strategies.

### **Emerging Risks**

Since the inception of an ERM framework in the company, DHG has been primarily focused on developing robust reporting of tier 1 risks. The reporting on emerging risks and their associated KRIs and risk mitigation strategies has lagged behind. However, the ERM team and the CRO are currently developing robust emerging risk identification and reporting processes that should bring additional value to the ERM process by ensuring that significant emerging risks are included in its risk inventory, and that related KRIs have been identified to monitor these risks.

Emerging risks, similar to the other risks, are primarily managed by the risk leads with regular dialogue with the ERM team. The Risk leads generally identify these emerging risks from a combination of discussions with external parties, industry news, and review of internal information. When risk leads identify these risks, they try to get as much information as possible to track the risk, particularly to determine the velocity at which the risk is approaching. The risk leads and the ERM team meet every six months to discuss and document those emerging risks that appear to be approaching the most rapidly. An example of an emerging risk is biological and chemical terrorism. This is a risk that could originate and play out in the company's service area resulting in a large scale disaster response impacting members, employees, business partners, and surrounding community. A key risk indicator related to this risk could be to tracking threat levels from emergency management and federal homeland security officials. Another KRI could be monitoring news reports of reported attempts that involve the company, the health insurance industry, and the communities situated near the company.

## **SUMMARY**

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Discovery Health Group has a comprehensive enterprise risk management process that is fairly mature. While the company's risk reporting through its ERM Dashboard is fairly robust, it is still working to develop formal KRIs that provide more of a leading indicator of risks. The company has effectively used an informal process for monitoring risks by discussing leading indicators with risk owners and key subject matter experts. These leading indicators, while predominantly qualitative, still provide insights about the future direction of risks, and are proving to be a stepping stone towards developing more formal, quantifiable KRI measures.



## Conclusion

Looking at the three individual case studies, there are some important similarities among the three companies. All three companies have a formal ERM process in place, as well as a governing body that oversees the ERM function as a whole. All three companies operate in heavily regulated industries and rely on detailed analytical data to support their ERM programs. Also, each company's ERM program was fairly mature before it began developing key risk indicators. An organization needs to have a good understanding of the risks it faces before it can begin developing metrics to track those risks.

Each company has taken a slightly different path in the development of key risk indicators, tailoring the approach to fit the needs and capabilities of each organization. Some companies use more analytical data to monitor the major risks facing them, and some use more qualitative analyses in their approach. Some are more focused on gathering data to develop their leading indicators, and others are focused on maturing other areas of their ERM program before tackling more quantitative indicators. Even though the companies have varying levels of developing KRIs, they all find value in the processes they use. Although the development process may need to be different for different companies, the key steps outlined in this report illustrate effective practices. The case studies in this report should serve as a tool for ERM practitioners that are looking for guidance on risk reporting and the development of key risk indicators.

## About the Authors



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