NC STATE Poole College of Management
Enterprise Risk Management Initiative

Revamping ERM: How Seven Companies Improved ERM Effectiveness

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Contents

Introduction

Enterprise Risk Management (ERM) is an ongoing process that takes a holistic, portfolio approach to the most significant risks to the achievement of the entity's most important objectives. Most ERM processes start very simplistically and evolve over time. As companies gain experience with ERM and identify best practices, they make updates and adjustments to the ERM process to improve its effectiveness.

The main purpose of *Revamping ERM: How Seven Companies Improved ERM Effectiveness* case study is to document and share examples of ERM process updates at seven different companies. The case study tracks how the participants across various industries and maturities of ERM functions have gone about modifying ERM practices. Additionally, the case study identifies similarities and differences between process improvements being completed across the different companies. Critical success factors as well as potential challenges in implementation will be noted. The findings of this case study suggest that improvements to ERM processes are ongoing in nature. Each case study participant identified plans for future enhancements to their ERM process. Enhancements will continue to be made as opportunities arise to streamline processes or enhance risk management effectiveness.

The case study identified four main themes for ERM refresh activities among the seven participants. The main themes identified include linking ERM and strategy, improving efficiency, gaining broader engagement and better dialogue leading to more informed decision making. One common finding throughout this case study was that the participants stressed the importance of executive support and endorsement. Executive support helps promote changes and engagement across the organization in driving value from ERM. This case study aims to offer valuable insight and useful information to anyone hoping to strengthen their ERM function as well as those who simply want to learn more about the evolution of ERM processes.

Case Study and Participants

These case studies were conducted by first gaining an understanding of the overall ERM process at each company, and then understanding the most recent modifications that had been made to improve the effectiveness of the process. The understanding was accomplished by interviewing the ERM leadership at each company and asking why each improvement was made, including the objective for the change, what benefits were achieved and what the reactions were to the implementation.

To ensure anonymity of the participants, we identified each company only by sector and revenue. Below is a summary of companies that are represented in this case study:

	A	B	C	D	E	F	G
Sector	*Oil and Gas*	*Manufacturing*	*Retail*	*Financial Services*	*Advanced Technologies*	*Beverage*	*Oil and Gas*
Revenue	$2 Billion	$11 Billion	$10 Billion	$22 Billion	$51 Billion	$36 Billion	$97 Billion

The review of the seven different organizations reveals common themes around the evolution of ERM processes as well as unique insights of best practices with each entity. Differences in industry, strategy, business model, culture, and maturity of ERM implementation are all contributing factors to the identified enhancements made to each ERM process.

Linkage of ERM and Strategy

The first common theme noted by case study participants surrounded the alignment of ERM and strategy processes. Entities will make better decisions and have a better chance of achieving strategic objectives if they appropriately consider risk in developing and executing strategic plans. Five of the seven participants in the case study mentioned they had engaged in ERM process updates that involved a better integration of ERM and strategy. The participants accomplished the linkage of ERM with strategy in a number of ways: by changing the focus of risks to include those related to achieving strategy, by changing the organizational structure of the company and by aligning of the timing of key ERM processes with the strategy and objective setting process. Although the linkage of ERM and strategy is a worthwhile endeavor, some of the participants did face challenges in the integration process.

By definition, ERM takes a holistic entity-wide approach to managing risk, and many studies have shown that the biggest risks to a company are strategic in nature. Accordingly, four of the participants changed the focus of their risk identification or risk assessment processes to specifically include risks to achieving company strategy. These four companies acknowledged that their previous approach to risk management had been mostly compliance based in nature. The companies realized that a more risk informed strategy would provide more value by proactively addressing the potential risks that could threaten the success of strategic initiatives or damage their competitive advantage.

Company A's previous risk identification process was conducted by Internal Audit with a focus on internal controls and finance related risks. In an effort to gain a better understanding of all entity wide risks, the Senior Manager responsible for ERM conducts open ended interviews to identify risks that might be detrimental to strategy. The questions asked in the interview to identify strategic risks include:

- What do you see as Company A's competitive advantage and do you see any risk to losing that advantage?
- What are the top three risks the company faces over the next five years that could have a significant adverse effect on achieving the company's strategic and/or financial objectives?
- What is the company doing to mitigate these risks?
- In your opinion, are these risk mitigation strategies effective? If not, what should we be doing?

Risks identified from these interviews compose the risk universe for the company. The identification of risk with a focus on implications for the company's strategy has given senior management a greater level of comfort that strategic goals will be met knowing that key risks have been identified and have a response plan in place.

Similarly, Company B realized the need to integrate ERM and strategy following an incident where Internal Audit fell short in their risk assessment by failing to discover that a competitor had developed a new technology that threatened the company's competitive advantage. To ensure there are no gaps in the risk identification phase, interview questionnaires now ask respondents to identify and assess risks outside their scope as well as market or external risks to the company. Furthermore, as part of the risk response process, the Director of ERM includes a member of the strategy team when it meets with risk owners to walk through the top five risks in their business operation. The purpose of this discussion is to ensure that the identified risks have appropriate mitigation techniques in place that are working effectively.

Company F has taken a more strategic approach to Risk Management through the use of a longer-term horizon. In the past, the focus had been on more short-term, operational or compliance type risks that typically did not affect the strategy or aid in long-term decision-making. Taking a more long-term view will allow the company to monitor and adjust to emerging risks, giving it more planning options to deal with risks as they arise. The longer time horizon allows for better integration with strategy, as there is a common focus on planning and dedicating resources to addressing the disruptive risks the future may hold. This improvement has been accomplished mostly by (1) developing a framework with an express focus on disruptive risk themes and (2) shifting the dialogues used in the annual interviews to stimulate more discussion about the long-term risks and opportunities that could disrupt the way the company does business.

Company D changed its capital analysis decision making process to involve strategy and risk management staff. The purpose of the integration is to identify significant risks that underly proposed projects. Attention is devoted to the mitigation of emerging and disruptive risks associated with each major project. The expansion of the risk profile has allowed for a more informed decision-making process.

Another common tactic used to integrate ERM with strategy has been through adjustment to the organizational structure of companies. Specifically, three of the participants made changes to their reporting or communication lines to achieve better integration of ERM and strategy. Company B has aligned the reporting structure so that the ERM function, led by the Director of ERM, now reports to the VP of Strategy in the organization. The VP of Strategy in turn reports to the CEO. Members of the strategy team frequently aid in ERM activities including interviews and risk assessments. This organizational structure allows for better collaboration and communication on critical strategic risk issues. Similarly, at Company F, the Director of ERM works closely with the Head of Strategy in an effort to be more proactive and forward thinking about risk.

At Company A, the Senior Manager leading ERM reports into the strategy organization, which is led by the VP of Strategy. The VP of Strategy then in turn reports to the second highest ranking person in the company, the Executive VP of Corporate Development. The company has made changes to its reporting lines to better address strategic risks. Previously, Company A had 3 groups reporting to the VP of Strategy: ERM (1 manager & analyst), Strategy (1 manager & 2 analysts) and Project Management (1 consultant). The new organization structure that reports to the VP of Strategy has the three groups organized as follows: Strategy Planning & Development, Strategy Execution and Strategy Modeling & Analytics. The Senior Manager of Strategy Planning & Development identifies a risk and creates a scenario of how the risk might materialize. The Senior Manager of Strategy Modeling & Analytics takes the scenario and uses Monte Carlo analysis in a financial model to assess the range of possible impacts to the company. The team would then layer in mitigations to the risk identified. Finally, the Manager of Strategy Execution ensures that for implemented initiatives, activities that are key to achievement of objectives, including risk mitigations, are on track. The Manager of Strategy Planning & Development now acts more as an “ERM Program Leader”. The process of establishing an ERM program aligned with strategy was seen as necessary to expand ownership of risk management throughout their organization, instead of housing it in a single department.

The last common process change made to better link ERM and strategy was the alignment of the timing of key risk management functions with the timing of the strategy and objective setting process. Better alignment between these two processes will ensure that key risk information is an input to the strategic planning process. Company A decided that the risk assessment process would be completed so that the information gathered could be an input in the development of strategic objectives at the company. The ERM function forecasts future trends that may impact the company and integrates those findings into the strategy. Following the risk assessment and forecasting process, the strategic objectives of the company are developed and assigned to the appropriate department for execution. Additionally, Company E changed the timing of the assessment of strategic and operational risk from the first to the third quarter in an effort to synchronize with the strategic planning cycle. The adjustment maximized the value of risk information for the strategy department by providing them with more timely and relevant information. The alignment has supported the business growth strategy.

All in all, companies reap the most benefit from their ERM functions when they are integrated with the strategy of the organization. The participants in the case study noticed some challenges to the process including changing the mindset of employees to appreciate the value in ERM and deploy appropriate resources to risk management. However, the participants also noted that the most important element to seeing success within the ERM function is executive support. With the support of top executives and ongoing conversation and education around ERM, companies will likely observe noticeable benefits.

Improved Efficiency and Effectiveness

Most ERM functions are thinly staffed; therefore it is essential to work efficiently if the function is going to be able to add value to the organization. In addition, because ERM can sometimes be viewed as adding bureaucracy, the ERM function must leverage the work being done in other areas of the organization and carefully consider the demands it makes of resources across the business. These factors have led companies to seek out and implement opportunities to make the ERM process more efficient.

At Company C, the ERM department previously operated through the use of manual spreadsheets and status reports, which were useful but neither very effective nor efficient. Because of the manual effort involved in reporting, risk information tended to be shared only at a very high level. When the new CRO arrived, she was tasked with refreshing the entire ERM process and quickly recognized that improving the quality of risk information would be the most important factor to reinvigorating the ERM process. Analyzing the data to provide better insights was one of the biggest challenges they would face. The volume of data to be analyzed meant a manual approach would be too time consuming. The company chose to purchase a software system to automate the risk tracking and monitoring process in order to improve efficiency, but more importantly, provide more insightful and timely risk information. This resulted in more prompt action on critical issues and improved decision making overall.

Companies G, A and B all made changes to their risk assessment and risk identification processes in an effort to improve the effectiveness of the ERM process as a whole. The common goal of these organizations was to improve the prioritization of risks and spend less time discussing the relative positioning of risks and more time developing a response to the most significant risks. In addition, the companies removed duplicate processes and ensured the optimal number of participants and meetings were used to facilitate a meaningful discussion of risk.

Company G changed the format of its quarterly workshops to reduce the participants in the workshop from 30-50 to 10-15. In addition, the company found that having separate risk workshops for two separate legal entities was redundant. In order to reduce this, they combined their two separate quarterly meetings into one. The conversation in the workshops has changed from refining risk reports to discussing opportunities to integrate risk into decision-making and existing processes. Additional topics that are now covered in the workshops include emerging risks, management system gaps, and topics to present to the Board. These changes will make better use of executives' time and should generate greater insights regarding the company's most pressing risks.

Company A has simplified their risk assessment process in order to better categorize risks. While the organization was preparing a top 10 list and creating heat map visualizations, it was not bridging the gap from risk assessment to risk response. The process change involved first changing the assessment process and then creating grouping based upon the desired risk response. The company changed the assessment process from a 5-point rating scale to a 4-point rating scale (1-minimal 2-major 3-critical 4-catastrophic) across 5 dimensions (environment, health &safety, reputation, legal & compliance, financial & strategic). A 4-point scale was found to be more effective because it has no "middle" and therefore, forces respondents to pick a side. The ERM function strayed away from a forced ranking technique because the fear was that it could lead to arguments and debate over the positioning of risks, rather than the actions around better management of the risks. The improvement to risk assessment was necessary to streamline risks and ensure that the proper policies and procedures were in place to direct attention and resources to emerging risks.

The company has benefited from the strengthening of the risk assessment process by being able to better link the identification phase to the response. Moving forward, the company will continue to benefit from this improvement by being better equipped to choose the appropriate response mechanism. The risk response matrix adopted by the company places risks into 4 categories of "prepare, act, park and adapt" based on the risk results related to impact and likelihood. The matrix has provided the organization with the appropriate nomenclature to better engage in risk dialogue. The improvement will be most noticeable in the integration of risk with strategy as the company is better able to understand the nature and exposure of their risks.

At Company B, changes were made to the risk identification and assessment process as a result of the integration of ERM and strategy. The Director of ERM initiated the change because he believed the two-dimensional heatmap and scoring system in which risks were ranked on a 3-point scale did not sufficiently differentiate the risks. Now, risk identification and assessment are initiated through the use of open-ended interviews that ask respondents from different regions to list the top three to five risks in their area of focus. After risks have been identified, each risk is ranked on a 5-point scale that goes from minimal to catastrophic across 5 dimensions of the company very similar to those used by Company A above. The objective of the change was to help people better differentiate and prioritize risks as well as allocate resources within the organization more efficiently. Better prioritization of risks has made ERM more relevant and allowed stakeholders to see the value in the process.

Company E found opportunities to gain efficiencies by forming a tighter relationship between the ERM function and Internal Audit through the creation of a strategy board. The strategy board is composed of representatives from both the risk and the Internal Audit functions. This board has quarterly meetings to consolidate the information provided by both departments and provides a forum to discuss risk mitigation activities. These discussion topics may be candidates for Internal Audit to include in the scope of their audit plan or to provide additional details that are helpful in existing audit activities. The sharing of risk identification and assessment information, as well as risk mitigation plans at a more granular or “auditable” level, helps the two organizations coordinate their work to ensure risk responses are working as intended. It also increases the accountability of risk owners in both the ERM function and Internal Audit.

Whether through automation, simplification or leveraging of existing resources, each of these participants mentioned have implemented process improvements that allow for a better use of limited resources. All the companies emphasized that their processes were still a “work in progress” and that they would continue to look for ways to streamline work and structure their processes to improve the focus on those risk management activities that provide the greatest value.

Broader Engagement

An important aspect of a successful ERM environment is the broad engagement in the risk management activities throughout the organization. In order to make risk management more relevant throughout an organization, all employees in decision-making positions should know how risks and risk management processes affect the organization as a whole as well as their individual area of responsibility. If an employee does not see how the ERM process can offer valuable input into their individual area of responsibility, then that created value may be lost in translation. Therefore, it is paramount to establish broad engagement throughout the organization.

The participants of this case study took different approaches to achieve broader engagement throughout their organizations. Company D implemented a bottom-up approach to risk identification while Company F focused on the implementation of ERM processes and establishing their importance at the local level. Company C expanded the areas within the company that fall within the scope of the Risk Council to promote better engagement across a broader group of employees.

An important starting point in engaging more employees in the risk management process is to ensure that the employees understand that the ERM process is value adding at all levels within the organization At Company F, there was a lack of understanding by employees in local operating units of how the ERM process could add value to their daily work. This issue was tackled by showing employees how ERM could make their jobs easier and how it could allow them to use their time more productively. Similarly, Company C also focused on communicating the value of

ERM throughout the entire organization. The approach they took involved increasing engagement with the project management function in order to integrate risk considerations into major projects that affect one or more business units across the company. As a result of those efforts, more business units have come forth and asked for assistance from the ERM department.

Broader engagement with ERM can improve the effectiveness at all stages of the process. As Company D implemented a bottom-up risk approach to their risk identification process, it allowed them to see similarities and differences between the top and lower levels of the organization The combination of the already existing top-down approach with the newly implemented bottom-up approach enabled the company to assess the potential impact of risks more precisely across the entire organization, thus improving the accuracy of the assessment. Increased engagement of the lower levels of the company in the ERM process has helped them apply a more holistic and entity wide approach to risk management.

Another company found that in order to engage more employees in the risk management process, the information the ERM department provides needs to be more granular and tailored to each department. If the ERM department fails to provide thorough and detailed information, personnel within the lower levels of the organization may not understand how the information is useful or beneficial to them. Company F moved to a new cloud-based system to provide the risk owners with more customized granular information using dashboards and visualizations. This information can be shared at the local level to help the employees understand how risks can impact their organization. Similarly, at Company B, the risk department tailors its risk reports to the specific user to help them understand the value and application of ERM to their area of responsibility.

The participants of this case study used a multitude of techniques to broaden ERM engagement throughout the organization. Company D used surveys of business process owners in order to support their bottom-up approach in the risk identification process. Company C, on the other hand, communicated tangible examples to demonstrate that ERM adds value for risk owners. Additionally, Company F used the implementation of a new software to show how the ERM process is valuable in every part of the company, subsequently convincing employees that the ERM process can benefit them in their individual areas of responsibility. The fact that these companies took different approaches to improve engagement across the organization reflects the importance of customizing the ERM process to fit each individual organization.

The main challenge to gaining broader engagement in the ERM process is convincing Senior Management as well as risk owners that it is worth the time to focus efforts on getting more employees engaged and invested in the ERM process. Moreover, it is important for corporate leaders to understand that the risk management process is not just done by the ERM department itself, but by everyone across the entire entity. All employees face risks on a daily basis and are a valuable source of risk information for the first line of defense in responding to risks. Engaging more employees often requires additional resources to be devoted to risk management, but there can be significant rewards in terms of better performance. The ERM team must make the case for the return on investments in ERM.

Better Dialogue and Decision Making

A key component to any successful ERM program is open and effective communication. The ERM function needs to communicate the right risks to the right people at the right time. Ideally communication within the organization should have a continual flow between employees, management, senior management and the Board of Directors. Communication is vital to establish relationships built on trust between the ERM department, business units and functions across the organization. Without focused dialogue on risks, entities could fall behind their competitors and potentially lose their competitive advantage. The participants in this case study have focused on involving the right people and facilitating the right environment that creates a better platform to make more informed decisions.

Company G has made changes to the format of Executive Workshops which are conducted quarterly and facilitated by the Director of Capital Analysis & Insurance. Previously, there were 30-50 invitees including executive level management. Now, the number of individuals participating in the quarterly Executive Workshop has been reduced to 10 members. These members consist of core ERM Committee members (President and CFO of each business segment), General Counsel, and the Chief Compliance Officer. Having a smaller group participate in the meetings has facilitated more meaningful dialogue by shifting the discussion from 'risk list management' and 'wordsmithing' risk updates to discussion of opportunities to integrate risk into decision-making and existing processes.

With the change to make executive workshops more exclusive, however, came the unintended consequence of losing the presence of Subject Matter Experts (SMEs) previously in attendance. This led to Company G's second major improvement, which was establishing a Risk Community for business units and risk managers to share best practices and improve risk management systems to support risk-based decision-making. The risk community will meet quarterly with all SMEs and Risk Owners to discuss opportunities for improvement in the current risk process, identify emerging risks and opportunities that may impact the company's strategic objectives, and more fully integrate risk management into existing decision-making processes. Company G is still in the planning process of launching the 'Risk Community' in the coming months, and hopes to create a link from the Board of Directors all the way through each operating unit that will improve the decision-making process and create value by changing each employee's mindset of risk moving forward.

Company D is also in the process of implementing a similar improvement by establishing 'Risk Liaisons' in the first line of defense to focus part of their time (20%) on risk management activities within their area of the business. The goal is to train one person in each department to be the "go-to" person or risk liaison, and eventually have departments conducting their own risk assessments. The risk liaison will help answer unit-level questions, assist with external auditors, and attend training to improve their skills in risk management. Results from a survey of current liaisons found some had a very strong understanding of risk management, whereas others had gaps in their knowledge related to basic risk management skills. As the program advances, there will be a need for more training and workshops to further improve the skills of liaisons.

At Company B, a change in risk monitoring practices prompted a change to improve the dialogue surrounding risk. Historically, Company B had nearly 30 risk items populated on its heat map, which made up the risk register. This became overwhelming and created confusion over the prioritization of risks. Thus, the Director of ERM simplified reporting to only focus on the Top 10 items on the heat map. The other 20 risks however, still remained within the risk register. This eliminated the need to rationalize the positioning of each risk and this focused the discussion around the most important risks. This practice allowed for better utilization of management's time at quarterly meetings.

Company B has also implemented significant improvements to the documentation and monitoring of risk responses. Previously, Internal Audit simply asked risk owners to input the mitigation tactics they already had in place. Now, the Director of ERM and a member of the strategy team meet with each risk owner face-to-face to discuss the top five risks to their department. The Director facilitates the conversation by focusing on what the risk owner does in response to each risk, what kinds of problems have emerged, whether additional resources are necessary, how effective the responses were, and whether they were on track or behind. This discussion allows the business leader to have greater insight into their own process and create more ownership of risks at the business-unit level. The Board of Directors and Senior Management support the granular view of risks and it gives them confidence that risks are being properly managed.

Company G, like Company B mentioned above, had some issues regarding the effectiveness of its heatmaps, concluding that the "heatmap was not representative of the likelihood and impact" of each risk. Company G felt that while the heatmap provided a good visual, it gave a false sense of precision for risks. In response they added bullseye and bow-tie analyses to their process. The bullseye approach presents the organization's risks in a visual shaped like a bullseye and broken down into three layers. The outer layer represents sector risk, which is common to all companies in their specified sector but is generally outside the company's control. The middle layer represents value-creating risk, which adds value for the investors of the company when properly managed through risk-reward analysis. The innermost layer represents the 'license to operate' risks, which are controllable and expected to be prevented and generally provide little to no upside.

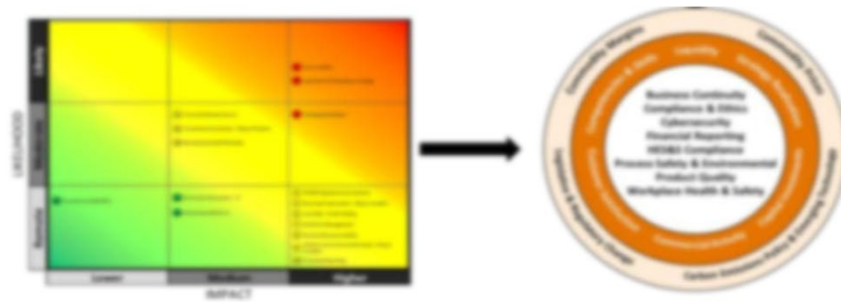


Diagram intentionally blurred

Image 1: Heat Map to Bullseye

The ERM team facilitates a risk analysis session that results in the development of a bowtie visual for each bullseye risk. The bow-tie analysis process starts with the risk at the "knot" of the tie and then moves to the left to identify and describe 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 is an evaluation of the 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 of the "knot" to look at the potential consequences that would result if the risk event occurred, and the plans the organization either has or should have in place to minimize the negative effects of the risk. See visual below:

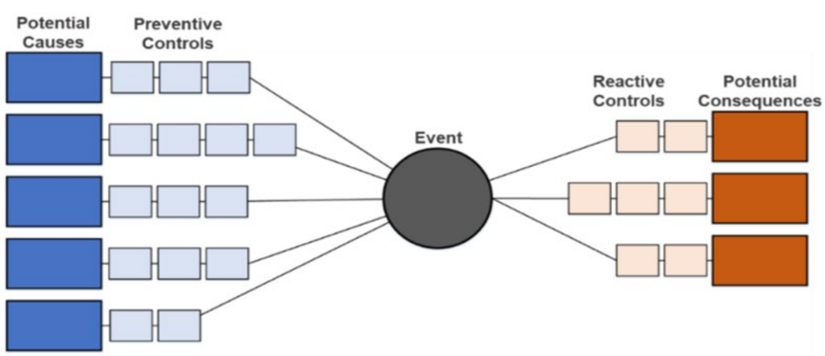


Image 2: Bow-Tie Analysis

The additional implementation of bow-tie risk analysis has proven to be a useful tool to communicate risk throughout the organization, identify opportunities for improvements within existing processes, and connect the dots between enterprise risks. Prior to the most recent update, only executives and upper management were involved in the ERM process. Now, each risk assessment meeting generally includes executives, managers, individual contributors, and subject matter experts. Feedback has been extremely positive on both the bullseye and bow-tie analyses because of the simplistic nature of each and an increased focus on top risks to aid in decision-making.

Conclusion

Just as ERM processes are not “one size fits all”, the opportunity for improvement in different processes as well as the means of achieving process improvements will vary. This is demonstrated by the seven case study participants. Each developed their own unique approaches to revamp their ERM processes. While there were many different changes implemented to refresh and reinvigorate the ERM process at these companies, there were some clear themes that came out in this study. The main themes that emerged were creating a better linkage between the ERM process and strategic planning, improved efficiency, broader engagement, and better facilitation of a richer dialogue around risks. These changes allowed for better informed decision-making and a more proactive approach to risks.

A recurring point of emphasis the case study participants shared was the importance of executive support and endorsement when changing the ERM process. Without executive support, it is difficult to successfully implement the improvements necessary to keep the ERM process current. Another common observation across case study participants is that they generally do not look at the ERM process as a static process, but rather one that is constantly evolving. An important part of the evolution is the continuous search for best practices through executive education, peer exchanges, ERM publications and various other means. The case study participants indicated that they continuously evaluate their ERM process and look for ways to add additional value.

Each company in this case study had different opportunities for improvement and took different paths to make the process more effective. In fact, some companies moved in very different directions when making changes due to the nature of the entity and the industry it operates within. For example, a large majority of the participants wanted a better integration between ERM and strategy; however, one participant found it needed an increased focus on compliance due to the nature of the entity and the significant role regulation played in its success. These differences highlight the need to tailor the ERM process to fit the needs of each individual company. Additionally, the process will continue to evolve much as the company evolves as a whole. Finally, case study participants noted that ERM process updates and modifications take time and should not be rushed into completion.

We hope that you find the variety of examples shared in this case study helpful in evaluating the ERM process at your organization.

APPENDICIES:
INDIVIDUAL COMPANY CASE STUDIES

APPENDIX A

Company Overview

Company A is an independent oil and gas company. Company A has a $2-3 billion market capitalization and enterprise value of $3-5 billion. Company A is focused on achieving shareholder value as well as safe and efficient operations and environmental stewardship.

Overview of ERM

ERM Function

At Company A, the ERM function operates more as a company-wide program/initiative than as a single department. It is championed by a Senior Manager who acts as a risk expert with the support of an Analyst that is more familiar with the industry. Historically, the Senior Manager reported to the General Counsel and was therefore two levels removed from the CEO. This year the Senior Manager began reporting to the VP of Strategy to better expand ownership of risk management throughout their organization, instead of housing it in a single department. They feel that by bringing accountability for risk management into their strategy group they will incorporate risk awareness into their strategies and help every leader take accountability for their role in risk management.

Strategy and Objective Setting

This year marks the beginning of a deliberate integration of the ERM function and the strategy function into one department. Their joint departmental mission is to inform, guide and protect Company A's strategy and provide decision-making support to enable its effective execution. This department has three main groups. The first group is responsible for strategy development and stewardship- maintaining risk landscape awareness and to affirm that strategic decisions align with the corporate strategic objectives and risk appetite. The second group focuses on strategy execution- ensuring mitigations/strategic projects are on track and meeting objectives. Both of these groups rely on a third group- modeling and analytics- to develop financial models and track Key Risk Indicators (KRIs) to monitor changing risks.

In order to use the enterprise risks to inform the strategy, the timing of the annual enterprise risk assessment (ERA) is aligned with the corporate objective setting process. The ERA is completed in May so that the information can be used to develop the strategic objectives of the company. Over the summer, more high-level long-term scenario analysis and strategic objective setting takes place. Strategic objective setting occurs over the span of June to September with the conclusions then presented to the Board in September. In October, the strategic objectives are shared with the top leaders of the company. In November each department's role in meeting the strategic objectives is developed and the department then develops a budget supporting those activities. Budgets typically go through revisions before gaining approval of senior management and the Board in January. Individual goals are set in February and March in an effort to push down the execution of company strategy to all levels of the organization.

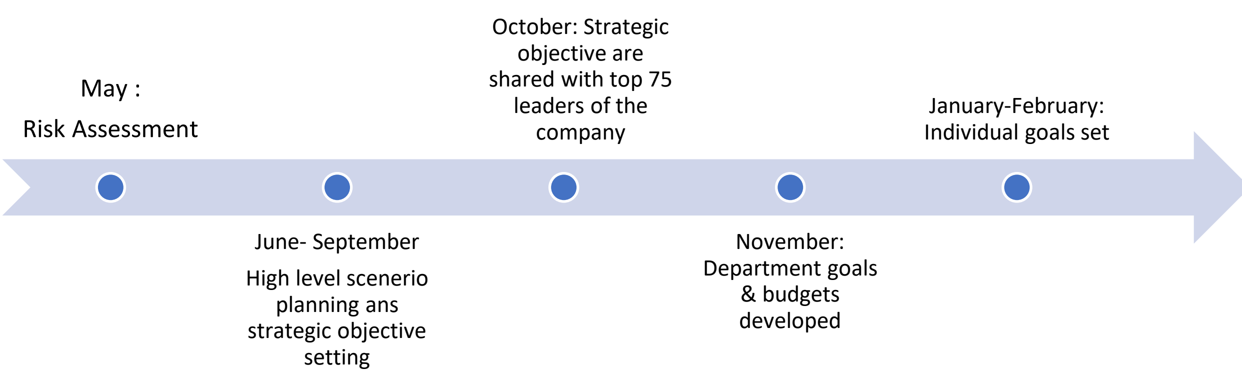


Exhibit 1: Timeline of Strategic and Objective Setting

Risk Identification and Risk Assessment

In regard to risk identification, the team conducts surveys, interviews (referred to as "dialogues"), and workshops. Last year they interviewed 15% of the organization. Interviewees span throughout the organization, from the Board and senior management all the way down the front-line of employees. Interviews typically include 4 open-ended questions that aim to help identify risks that might be detrimental to the strategy of the entity over the next five years. Additionally, their Risk Management Council (RMC) composed of 15 people that serve as VP's or Directors in key areas of the organization help select the best people for an interview. Higher management as well as the hand selected people then complete interviews. Approximately 15% of the organization was interviewed, including those in both operational and management roles. The questions are designed to be very broad and then will be followed up with more specific questions based upon the respondent's answers.

Such a heavy organizational touch is not used every year. This year the team will do individual Board and senior management interviews as well as some select employee interviews. This year the team is also interviewing some of their company's consultants to get more of an "outsider view" of their organization's risks. Company A assesses the risks identified through the use of surveys, dialogues and workshops in measurements of likelihood and impact. Each risk is rated on a 4-point scale against 5 key impact dimensions: environment, health & safety, reputation, legal & compliance, financial & strategic. The rating scale for impact goes from 1 as minimal, 2 as major, 3 as critical and 4 being catastrophic. Each risk will then be given a total impact score that takes into account the risk assessment on all five dimensions (See Exhibit 1). The rating scale for likelihood is similar, ranging from 1 as rare to 4 as frequent.

Company A does not develop heat maps but instead visualizes risks on a Risk Response Matrix like the one pictured below that they adapted from the Lego company. The X axis measures likelihood and the Y axis measures impact, both on a 4-point scale. The matrix creates 4 separate quadrants. The top left quadrant characterized by high impact and low likelihood, is coined the "Prepare" zone. The top right quadrant characterized by high likelihood and high impact, is the "Act" zone. The bottom right quadrant, high likelihood and low impact, is labeled as the "Adapt" zone. And the bottom left quadrant, low likelihood and low impact, is labeled as the "Park" zone.

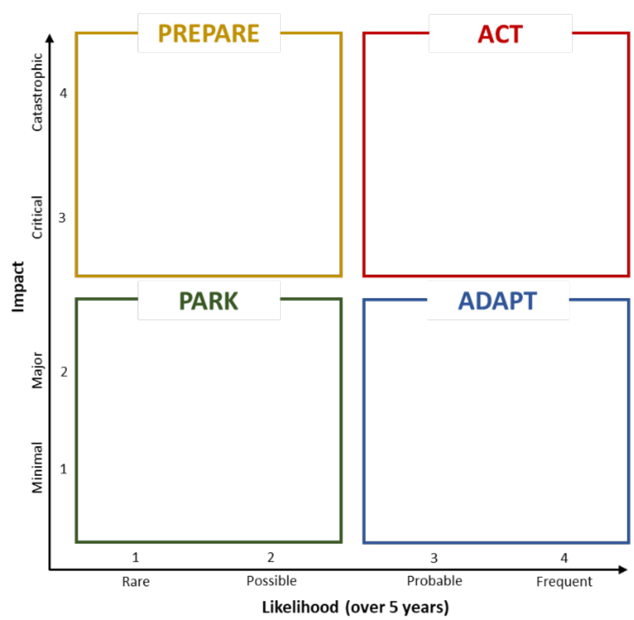


Exhibit 2: Risk Response Matrix

Company A reassess its risks annually in May and every other year they engage in a deep assessment through the use of workshops. The full assessment involves interviews with 10-15% of company employees. The interim assessments involve senior leaders, with a heavier emphasis on key risks. The deep assessments are to monitor the risk universe and ensure that the company isn't missing any emerging risks. However, the ERM process has the ability to add new risks as they occur or are brought to light at any time.

Risk Response

At Company A one risk owner, generally a Director or VP, is assigned for every risk. The risk owner, who is typically on the RMC, will share with the RMC how the risk's triggers have changed and update on any new actions that have been taken to mitigate the risk. If the RMC deems a risk has changed score, they will either escalate or downgrade a risk. Any risk escalation can include potential additional mitigations for senior management's consideration. All escalated risks are brought to the senior management team's attention as soon as practical. Generally, risks are monitored through the RMC on a quarterly basis. A summary of the meeting is discussed with the senior management team each quarter and then also discussed with the Board Audit Committee each quarter. The full Board of Directors discusses the ERA once a year. Risk owners understand the importance of risk and recognize the ERM program is a resource that can be used to strengthen the management of risks in their area. As a smaller company, it is fairly easy for the team to engage in candid, informal conversation with members of the organization about risk.

Communication and Monitoring

Results of the Enterprise Risk Assessment are communicated typically only to the RMC, senior management and the Board of Directors. The team assembles the risk information into a booklet that is distributed to the RMC, senior management, and the Board of Directors. Risk owners are able share information within their organizations at their discretion, but the formalized risk matrices and risk booklets are not shared more broadly. Senior management and the Board Audit Committee receive reports on the most critical strategic risks on a quarterly basis while the full Board receives an annual report. Last year 10 risks were deemed critical to the achievement of company strategy and risk owners presented on them to the Board of Directors at their annual strategy meeting.

The ERM program has not yet implemented KRI tracking. However, risk owners individually follow metrics that are relevant to the risks within their area of responsibility. Significant changes are frequently discussed with the team outside of the formal process. As the modeling and analytics team matures, they intend to build formal KRI tracking.

Risk Culture and Leadership

Effective Enterprise Risk Management is not specifically tracked and rewarded through compensation plans; however, effective risk management is indirectly rewarded as it aids in the achievement of corporate goals. At Company A, having open discussions about risk management is important. The senior management team makes a conscious effort to encourage employees to bring concerns forward. Through an online internal assessment, the company surveys all employees anonymously each year, and while the main objective is to measure satisfaction, the survey also asks about the risk culture and whether there are any key risks that are not being addressed. There are other channels including a whistleblower hotline that are available for employees to voice concerns. Employees are also educated on the role of ERM through the internal website, Lunch and Learns, and "Roadshows." The purpose of a Roadshow is to allow the team to teach about basic risk management principles as well as give employees a point of contact for risk concerns.

The leadership at Company A is very supportive and engaged with the ERM process. The Chairman of the Board and CEO interviewed the Senior Manager and are committed to using ERM as a strategic tool for decision-making. The Senior Manager not only meets formally with the CEO on a monthly basis but also occupies an office near the CEO which provides frequent opportunities for informal conversation. Earlier this year the entire senior management team, several Board members, some key VPs and the risk team attended a two-day executive training on ERM to learn about some tools and techniques to "hack their strategic thinking." The Senior Manager is frequently invited to high-level meetings that involve significant corporate transactions or key decisions. Overall, the Senior Manager has a good relationship with top executives and the executives appreciate the value that ERM brings to the company.

Exhibit 3: Risk Impact Score

Risk Score (Pre and Post-Mitigation)

Pre-Mitigation (Inherent) and Post-Mitigation (Residual) Risk Scores

◊ = Pre-Mitigation Score

● = Post-Mitigation Score

Risk Likelihood					
	4 - Frequent	4	8	12	16
	3 - Probable	3	6	9	12
	2 - Possible	2	4	6	8
	1 - Rare	1	2	3	4
		1 - Minimal	2 - Major	3 - Critical	4 - Catastrophic
		Total Risk Impact Score			

Pre-Mitigation Risk Score

Risk Impact by Area					
Risk Areas	Environment, Health, Safety	Reputation	Compliance/ Legal	Financial	Strategic
Impact Scores per Area (1-4)					
Weightings					
Weighted Scores per Area					

Risk Impact Score

Inherent Risk Score (Pre-Mitigation Risk Score)

Risk Impact Score	* Risk Likelihood Score	= Inherent Risk Score

Post-Mitigation Risk Score

Risk Impact by Area					
Risk Areas	Environment, Health, Safety	Reputation	Compliance/ Legal	Financial	Strategic
Impact Scores per Area (1-4)					
Weightings					
Weighted Scores per Area					

Risk Impact Score (Post-Mitigation)

Residual Risk Score (Post-Mitigation Risk Score)

Post-Mitigation Risk Impact Score	* Post-Mitigation Risk Likelihood Score	= Residual Risk Score

Mitigation Effectiveness Score (Inherent Risk Score - Residual Risk Score)

ERM Improvements

Company A has undergone notable improvements to their ERM process to provide the most current and relevant risk information to the company's leadership. The main improvements noted by Company A revolve around the integration of ERM with strategy and the Risk Identification and Risk Assessment processes. However, improvements are made on an ongoing basis as best practices are identified and implemented.

Process Improvement 1: Integration of ERM with Strategy

One of the main improvements that Company A has undergone includes the interconnectedness of the ERM program with strategy. Previously, there was little integration between ERM and strategy. Internal Audit would report risk information to the senior management team once a year for compliance purposes, but not from the viewpoint of offering valuable risk input to strategy. The Board Chairman and CEO both saw the potential value of ERM and asked the company to better align risk and strategy. The CEO accomplished this by approving the addition of a new position of VP of Strategy and moving the Senior Manager to reporting into the strategy organization. The VP of Strategy reports to the number 2 in the company, EVP of Corporate Development. The company has benefitted from having a structured process to connect risk and strategy and facilitate discussions of key strategic risks. Furthermore, by treating ERM as a company-wide program, Company A has been able to expand ownership of risk management throughout their organization.

The integration between ERM and strategy continues to evolve at Company A. Previously, Company A had 3 groups that were composed of ERM (1 manager & analyst), Strategy (1 manager & 2 analysts) and Project Management (1 consultant). Currently the employees and contractors that report to the VP of Strategy will transition into managerial roles with differing roles and responsibilities. The new position titles that report to the VP of Strategy include manager over Strategy Planning & Development, Strategy Execution and Strategy Modeling & Analytics. Each manager will also have one analyst to support them. All three groups have ERM responsibilities. The manager of the Strategy Planning & Development is the original risk expert of the company and now acts more as an "ERM Program Leader" where the program includes the Risk Management Council that includes members outside of the VP of Strategy's organization.

An example of how the risk responsibilities span the new Strategy group could include: The Senior Manager of Strategy Planning & Development identifies a risks and creates a scenario of how the risk might materialize. The Senior Manager of Strategy Modeling & Analytics takes the scenario and uses Monte Carlo analysis in a financial model to assess the range of possible impacts to the company. The team would then layer in some mitigations to the risk identified. Finally, the Manager of Strategy Execution ensures that for implemented initiatives, activities that are key to achievement of objectives, including risk mitigations, are on track.

The process of establishing an ERM program aligned with strategy was seen as necessary to expand ownership of risk management throughout their organization, instead of housing it in a single department. Bringing accountability for risk management into their strategy group incorporates risk awareness into their strategies and helps every leader take accountability for their role in risk management.

Process Improvement 2: Risk Identification

The second of the main improvements that has been made to the ERM program at Company A is the restructuring of the risk assessment process. Previously, there was no formal ERM team and Internal Audit was conducting much of the risk management process. When Internal Audit conducted the risk identification process, the focus was on risks that were typically more accounting related and internal in nature. Consequently, the all-inclusive list of over 100 risks as well as a "top 10 list" were not very useful for strategy setting and were predominantly financial based. The source of this limited risk identification process was the limited knowledge of and use of the company's overall business strategy as a basis for identifying risks. As the company moved more towards an integrated approach to risk and strategy, the risk identification process saw major improvements. The Senior Manager drove the changes towards a more collaborative approach to risk management. The improvement was necessary to create risk ownership and encourage people internal to the organization to be more proactive about risk and to understand the interconnectedness of risks. The owners of individual risks now have a greater perspective of emerging risks and they have more of a voice and engagement in the risk identification process.

The company has been impacted by a much greater understanding of risks at all levels to the company and how they move. Last year 75 interviews were conducted to compose a risk universe for the company. These interviews contain open ended questions to identify risks that are detrimental to strategy. A Risk Management Council of 15 people map and track these risks. Previously only the top 10 risks would be identified and assessed. The extent of the risk identification however, only included 2 slides on a PowerPoint in which the risks were listed and given a bullet point each of explanation. Now, the company has a watch list of about 30 risks that are being monitored continuously. The company also has added much more detail and clearer definitions behind every identified risk. For example, instead of a risk being identified simply as a "regulatory risk" it may now be identified as a "risk of failing to anticipate changing regulations leaving us unable to operate due to lack of compliance or financial loss due to noncompliance." By being more explicit about how the risk could occur and impact the company, there is better ownership and understanding of the need and means of managing each risk. Overall, the improvement to risk identification has successfully established an effective risk culture and a dialogue coined "psychological safety" around risk in the organization. The process is continuing to evolve. It took 6 months to design and implement for the first time. After a framework was established risks are identified and updated on an ongoing basis and presented to the Board Audit Committee quarterly.

The transition was fairly smooth as time was spent ensuring key stakeholders understood the purpose of the change. The Senior Manager developed a communications plan and spent time engaging key stakeholders and securing champions within the organization. For some, it wasn't until there was a tangible output produced that they could fully understand the purpose and results. Over time there has been a greater level of understanding and the CEO says he can focus on other issues knowing that risks are identified and have a mitigation process in place if they were to escalate.

Moving forward the company is continually striving to improve its risk assessment maturity. The company is working towards mapping the interconnectedness of risks and developing quantitative Key Risk Indicators (KRI's). The hope is for the company to continue to think more proactively about risks through indicators. Additionally, the goal is to gather more data to support risk identification and less ad hoc qualitative assessments to improve the risk identification process further.

Process Improvement 3: Enterprise Risk Assessment

The third major improvement that Company A undertook to its ERM program was a better categorization and assessment of risks. The Senior Manager made this change because the ERM program was preparing a top 10 list and creating heat map visualizations but was not bridging the gap from risk lists to risk response. Previously risks had been assessed on a 5-point scale which did not capture the appropriate assessment of risks. She found best practice was to assess risks on a 4-point scale (1-minimal 2-major 3-critical 4-catastrophic) across five impact dimensions of the company (environmental, health & safety, reputation, legal & compliance, financial, strategic). A 4-point scale has no "middle" therefore, it forces respondents to pick a side. The ERM program strayed away from a forced ranking technique because they had previously seen it led to more energy spent over the positioning of risks than the actions to manage the risks. The improvement to risk assessment was necessary to streamline risks and ensure that the proper policies and procedures were in place to direct attention and resources to emerging risks.

The company has benefited from the strengthening of the risk assessment process by being able to better link the identification phase to the response phase. Moving forward the company will continue to benefit from this improvement by being better equipped to choose the appropriate response mechanism. The risk response matrix adopted by the company that places risks into the four categories of "prepare, act, park and adapt" based on their risk results related to impact and likelihood. The matrix has provided the organization with the appropriate nomenclature to better engage in risk dialogue. The improvement will be most noticeable in the integration of risk with strategy as the company is better able to understand the nature and exposure of their risks.

The transition to implement this new risk assessment process was fairly smooth because it was a tangible first output of the ERM program that was owned by the Risk Management Council, not the ERM leader. Additionally, there was a lot of effort put into intentional communications and engaging key company leaders as champions. Overall, people were receptive to the changes made as they felt the changes made sense and saw how the risk assessment could help them better understand their risks in the corporate context.

APPENDIX B

Company Overview

Company B is in the manufacturing sector and has a reported $9.5 billion in assets and $11 billion in revenue and employs over 11,000 individuals across 10 countries. The company is driven by a purpose to shape a sustainable world by working alongside customers to provide innovative solutions.

Overview of ERM

ERM Function

At Company B, the ERM function is led by the Director of Enterprise Risk Management & Corporate Strategy ("ERM Director") who reports to the VP of Strategy within the organization, who in turn reports to the CEO. The ERM Director is the sole facilitator of ERM activities across the organization, acting as a "team of one." However, members of the strategy team and analysts assist in ERM activities such as the interviews and assessments. The ERM Director also has a strong partnership with Internal Audit which use a lot of the information that is developed through enterprise risk management when planning audits. The objective of the ERM function is to oversee and then report on enterprise wide risks to the Executive Committee and Audit Committee. The established ERM Framework, as pictured below, ensures that the ERM function identifies and prioritizes top risks, events and emerging trends and that risk owners are assigned to develop actions to mitigate and manage risks Additionally, the application of the Framework helps to ensure a clear assignment of risk ownership, continuous open dialogue and decisions with risks in mind.

Diagram 1: ERM Process: Framework in Action

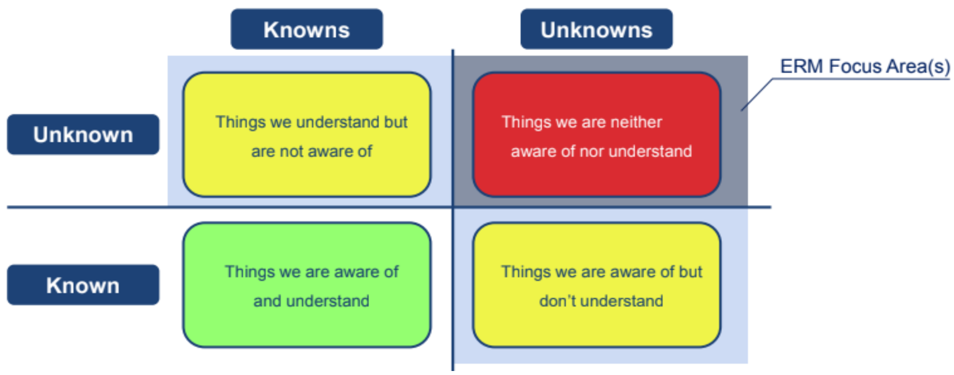
Strategy and Objective Setting

The ERM function at Company B is linked to the strategy of the organization through the relationship and reporting line of the Director of Enterprise Risk Management to the VP of Strategy. The VP of Strategy and strategy team define the strategic priorities of the company, perform a SWOT analysis, lead initiatives behind diversification and seek competitive intelligence. The integration of ERM and Strategy stems from the ERM report becoming a key input to the development of the strategic agenda and prioritization of focus areas.

Risk Identification

In regard to risk identification, annually the Director of ERM conducts interviews using a standard questionnaire (See Exhibit 1). The purpose of the interviews is to identify items or events that may impact or impede the business from achieving its results. These interviews are conducted with the CEO and other company leaders down to the plant managers across multiple business functions of the company. In total, approximately 130 business leaders are interviewed. The questionnaire covers current and emerging risks that the business leaders believe are relevant to the area, function, facility or region. Company B operates in 10 different countries therefore, interviews are conducted regionally. The identified risks will vary throughout the organization based on geographic location. Each interviewee is asked to identify three to five risks that are internal to their area or function as well as three to five risks outside their area and any additional external or market risks that might affect the entity. The interview questionnaire also asks the respondents to consider longer-term emerging risks or potential future risks which could have a significant negative impact 2-5 years out as well as any risks or opportunities that the organization could be overlooking. The Director of ERM as well as the VP of Strategy will gather the results of these interviews and issue an annual report in the spring. In the fall, semiannual follow-ups will be conducted with approximately half of the participants. Off-cycle special focus assessments are also conducted in other quarters to keep track of the top 10 risks and ensure that information does not become stale. Company B also uses a risk quadrant, pictured below, to focus ERM efforts on identifying the unknown risks that could impact the business. With this identification technique Company B can then work to assess the risk and assign a risk owner to develop an appropriate response to mitigate or manage the occurrence of the event.

***Figure 1**: Risk Quadrant*



Risk Assessment

Company B analyzes the results of the interview questionnaires through careful collaborative review and discussion of risks collected. Respondents to the annual interviews are asked to gauge the risks they identify on a five-point scale as they related to:

- Likelihood – how probable or frequent is the potential risk?
- Impact – what is the magnitude of the risk?
- Vulnerability – how effective are the controls to mitigate this risk?
- Velocity – how rapidly might this risk change?

Once assessed, the risks are assimilated into categories and are prioritized accordingly. As risks are categorized, they are placed in a risk universe. Company B then uses a multitude of visualization techniques to map the identified risks and their potential impacts on the entity. These visualization techniques include a heat map, strategy map, watch list and a risk register.

Risk Response

The Director of ERM's role is focused on the governance of risk and does not include risk ownership. Thus, a risk owner or risk owners are assigned to each risk. The risk owner is typically the head of the specific business unit principally affected by the risk. Each risk owner is responsible for developing plans to mitigate and measure the identified risks. The risk owners have the responsibility to report risk response activities to the ERM function. This is generally done in the form of constructive meetings. In these meetings, the risk owner and ERM Director will discuss the actions that were taken as well as any challenges that were faced. In the event that no improvement has been seen, the ERM Director will help identify whether the problem was a result of a lack of resources or knowledge. The Director of ERM acts in an advisory role in support of the risk owners and offers advice such as best practices to help the risk owners fulfill their role.

Communication and Monitoring

Through the use of heat maps, emerging risks and watch lists, Company B is equipped to monitor and track trends in risks. Company B develops a heat map for each region of business as well as one on a global level. The regional heat maps are shared by email to the regional leaders who may share them at their discretion with their individual teams. The global heat map is shared with the CEO and Top 10 Executives. Emerging risk visualization enables Company B to determine how prepared they are for any given risk occurrence. Watch lists, which change from quarter to quarter, ensure that management does not lose focus on emerging risks. Risks reports are provided on a quarterly basis; however, depending on the nature and relevance of the risk issue, reports may go out more frequently.

The Director of ERM reports to the Audit Committee every quarter and communicates frequently with the Executive Committee and Board. He works to help senior managers achieve strategic objectives in a variety of means including facilitating conversations around risk variables and attributes as well as conducting workshops that include scenario planning. The Director of ERM is focused on communicating the purpose and value that the ERM process can provide to the business leaders.

Risk Culture and Leadership

Company B is fairly new to the ERM process as the Director has only been in his current role for the past two and a half years. He is directing much of his efforts to gaining exposure for ERM within the entity and putting the process and discussion in front of decision-makers. He receives the support from management as they are very receptive to his input and are engaged and complementary during quarterly reports. Moving forward, the Director hopes to further change the mindset of employees within the organization to value the importance and usefulness of ERM. He has the vision to further expand the ERM process as it matures so that lower levels of the organization will be part of ERM, and risk management will become even more of a continuous conversation.

Exhibit 1: Risk Assessment Template

FY 2019 ANNUAL RISK ASSESSMENT - ERM Update
May 2019

Name:

Position:

Entity: Nc

Date:

Scoring Cr

Impact = EBITDA or Cash ($ millions)				
5	4	3	2	1
> $100M	$50-$100	$25-$50	$5 -$25	< $5

Likelihood = Probability of Occurring				
5	4	3	2	1
Expected > 90%	Likely 50%-90%	Possible 25%-50%	Unlikely 5%-25%	Rare < 5%

Velocity = When could this risk occur? (in Months)				
5	4	3	2	1
Very Fast – Imminent/Now	Fast 1 - 3	Medium 3 – 12	Slow 12 – 24	Very Slow 24 +

Vulnerability = how effective are the controls to mitigate this risk?				
5	4	3	2	1
Very High Risk – no mitigation at all	High Risk – mitigation in place but not effective	Medium Risk – planned but not in place	Low Risk – in place and progressing	Very Low Risk – well established mitigation

RISKS (current or emerging)	IMPACT EBITDA or Cash ($ millions)	LIKELIHOOD Probability of Occurring	Velocity Months	Vulnerability Control Effectiveness
Top 3 - 5 risks within your area, function, facility or region				
Top 3 - 5 risks outside your area, function, facility or region				
Top 3 - 5 external, market or other risks				

Longer Term Emerging risks or potential future risks which could have significant negative impact over a longer time horizon (2 - 5 years out):
What risks, or opportunities, aren't being talked about?

ERM Improvements
Company B has undergone some major changes to their ERM process within the past two and a half years that have provided many beneficial results to the company. The main improvements noted by Company B involve the integration of ERM with strategy, risk Identification and risk assessment, risk response and monitoring processes. However, as ERM is an ongoing process, the company will seek to continue to make further improvements to the function to provide the most value to the company.

Process Improvement 1: Integration of ERM with Strategy
The first main improvement that Company B made was an integration of ERM with Strategy. Previously the ERM function was performed by Internal Audit. However, the Board felt that Internal Audit was not strategic enough in its risk assessment which became apparent when a competitor came out with a new technology that posed a significant and totally unanticipated threat to the company. Thus, the Board of Directors initiated the improvement to establish a separate ERM function independent from Internal Audit that would be integrated with the strategic planning function of the company. The improvement was necessary to minimize surprises and anticipate competitors' moves in the market. Additionally, the objective for the change was to integrate competitive intelligence with risk and strategy. The integration of risk and strategy would help the company feel more adequately prepared for the unknown.

Overall, the company is satisfied that they have achieved the objective for the improvement and the company and top executives have a greater sense of comfort knowing that a plan is in place for mitigation of identified risks. The transition of responsibilities was characterized as professional in nature and was accomplished smoothly. Internal Audit and the ERM function continue to have a good relationship with Internal Audit continuing their involvement in the risk identification interview process and receiving the reports generated by the ERM function.

Senior management and the board of directors are very pleased with the level and depth of reporting that is now being produced. Some employees, however, did not immediately understand the transition and it took time as well as ongoing interaction to gain their acceptance. This was somewhat of an unexpected result of the improvement. It was necessary to change the employee's perspectives of the ERM function from strictly compliance based to a value adding process that is strategic in nature. As perspectives began to change, the Director of ERM was able to act as a best practice champion by connecting different people and processes across the organization to better allocate resources and manage risk. This change is still evolving as it takes time for processes to be shaped and crafted; the company plans to continue to leverage the connection to strategy and achieve a greater level of influence.

Process Improvement 2: Risk Identification and Assessment
Changes were made to the risk identification and assessment process as a result of the integration of ERM and strategy. The Director of ERM initiated the change because he believed the two-dimensional heatmap and scoring system previously done by Internal Audit was not sufficient. Previously, Internal Audit conducted assessment surveys where risks were ranked on a 3-point scale. However, now they conduct the risk assessment process by asking the respondents what the top 3 to 5 risks are in their area of focus, outside their area of focus within the company and in the market. Once those risks are identified they are they ranked on a 5-point scale (minimal to catastrophic in effect) across 5 dimensions of the company. Additionally, the ERM function uses this information to develop a report for each region as well as one consolidated global report.

The objective of the change was to help people better differentiate and prioritize risks as well as better allocate resources within the organization. The development of regional ERM practices gave leaders something they could own and was relevant and applicable to their operations. Better prioritization of risks has made ERM more relevant and stakeholders now see more value in the process.

Overall, the process took time to engineer and there was a learning curve that had to be overcome by the risk owners. Interestingly, the employees were in favor of the change yet senior management and the board were a bit hesitant. They thought becoming too granular in identifying and assessing risks would lead to inaccuracy and questioned how accurately you could assess probabilities and impacts of risks for which they had no historical experience. This reaction was unexpected but with time the board and senior executives ultimately accepted the change and came to appreciate the increased depth of information that was provided. Moving forward the Director of ERM would like to see the adoption of technology that would enable better record-keeping and the development of key risk indicators.

Process Improvement 3: Risk Response

Over the past two years Company B has made significant improvements to the documentation and monitoring of risk responses. These improvements were driven by a desire to better measure existing mitigation efforts. Previously, Internal Audit simply asked risk owners through email to input the mitigation tactics they had in place. Today the process has much more depth. The Director of ERM, alongside a member of the strategy team, meet with each risk owner face to face to walk through the top 5 risks in their area. The Director of ERM will facilitate conversation around what the risk owner does specifically in response to each risk, how the response is going, what kinds of problems have emerged, whether additional resources are necessary, how effective the responses have been and whether they are on track or behind. The facilitation between the business leader and the Director of ERM has allowed the business leader to have a greater insight into their own process. They are able to stop and think about the purpose of their mitigation tactics and prioritize their time and effort to best benefit, change and contribute to their risk management efforts.

All in all, the transition to the new risk response mechanisms was fairly smooth. As with most process improvements the change did come with a learning curve. Risk owners are very busy with their day to day obligations and the initial resource demands stemming from the face to face conversations and scoring of mitigation responses made them a little uneasy. However, they soon came to realize the importance and value that came with the change. The board of directors and senior management were very supportive of the increased depth of the risk response process. They appreciated seeing more granularity in ERM reporting because it gave them greater confidence that risks were not only being identified but that they were being properly managed as well. Moving forward, the Director of ERM would like to see the risk register discussed in more depth by the Executive Committee and would like to see the committee hold risk owners to a higher level of accountability.

Process Improvement 4: Monitoring

The final main improvement implemented by the ERM function at Company B revolves around the monitoring of risks within the organization. Historically Company B had nearly 30 risk items populated on a heat map which in turn composed the risk register. This became very overwhelming and created confusion over the prioritization of risks. Thus, the Director of ERM simplified the reporting, consistent with best practice, to only put the top 10 items on the heatmap. The other 20 risks remained in the risk register and watchlist for monitoring.

The improvement of the monitoring process allowed for better use of management discussion time at quarterly meetings by focusing on the “big points” without the need to rationalize or justify the prioritization of risks. The process took nearly two years to change, including a year to assess the past process and evaluate the need for an improvement to the monitoring process. Sharing the new process and gaining approval from the executive committee and internal audit also took significant time due to the quarterly meeting schedule. However, the transition was smooth and the board as well as senior executives welcomed the change. The improvement brought about a revised view to risks on the heat map that made it cleaner and easier to identify the most important risks to focus upon.

The company recognizes that ERM is a journey not a destination, therefore there will continue to be opportunities for improvement across the entire function. As noted earlier, The Director of ERM still believes that better technology could be used for ERM reporting and monitoring. The ERM function currently operates on Microsoft Office and PowerPoint software, but he would like to move to a more robust system to take their ERM processes to the next level. Finally, increased executive team engagement with ERM is so critical to the success of an ERM program that it can almost always be improved.

APPENDIX C

Company Description

Company C is a specialty retailer with stores and branches across North America. Company C had revenue of more than $9 billion in its most recent fiscal year.

ERM Overview

ERM Function

ERM is led by an employee with a dual role as both the Chief Audit Executive and Chief Risk Officer. The CRO reports on risk directly to the CEO. Currently, ERM consists of the CRO, one manager, an analyst and a data scientist. A Risk Advisory Council meets every four weeks to discuss risk and is comprised of C-Suite risk owners within the organization, including the CEO, EVP of HR, EVP of Supply Chain, Chief Procurement Officer, Chief Information Security Officer, Chief Technology Officer, Chief Audit Executive, VP of Safety and the EVP of General Counsel. The purpose of the Risk Advisory Council is to oversee risk in a holistic manner across the Company.

Strategy and Objective Setting

The ERM function within Company C is working to make strides in influencing the annual strategy and objective setting process within Company C. The ERM function started with the documented strategy to align the Company's risk with the 6 core pillars of risk to assist in driving the company's results. Risks are presented to executives and the Board within the context of how they could adversely affect each of those core pillars.

Risk Identification

The company uses a combination of interviews, workshops and surveys to identify risks. 75 interviews from executives down to employees at manufacturing plants were conducted last year, and that number has grown to 200 this year. The interviews are open ended with risk themes utilized as topics of discussion. Risk workshops are also utilized for analyzing risk implications for strategic business decisions. Questions and risk themes explored within the workshops, surveys and interviews are updated on an ongoing basis as the ERM function works with the business throughout the year.

Risk Assessment

The ERM function ranks risks over two measures, impact and likelihood, and is considering the addition of a third measure, residual risk, to take risk response measures into account. A five-point scale is used to rank each measure used. The ERM function uses visual tools such as heat maps to help aid executives in seeing their risk assessment process.

Risk Response

Risk responses are the responsibility of risk owners who are typically the executives in charge of each strategic risk of Company C or the most senior official within the relevant department. The ERM function focuses on the most critical areas of risk where the company's risk tolerance has been exceeded which are indicated by a 'red KRI'. These are the risks that are most critical to the achievement of strategic objectives and may be escalated to the CEO for further discussion over how to best execute an appropriate risk response.

Communication and Monitoring

Risks are communicated to the board using dashboards. Executives within the organization prefer to see a risk dashboard that shows the firm's risk positions at a high level. Workshops are utilized more often to incorporate employees who are out in the field managing the risks themselves. In general, the ERM function seeks to tailor their communications to risk owners and managers with their audience in mind. KRIs are also utilized within the monitoring process to ensure that each key risk is being managed sufficiently. Each KRI has three ranges associated with them: green, yellow, and red with red indicating that risk has exceeded tolerance levels. The thresholds used to determine the red, yellow, green ranges and mark escalation to higher levels are designed by risk owners with input from the Chief Risk Officer or ERM manager.

Risk Culture and Leadership

Company C has a strong silo-based risk culture that is transitioning to a more enterprise level of risk culture. The firm displays a sense of pride in their craft and the fulfillment of their vision of providing goods and services and the requisite knowledge to fulfill their customer's needs. With the support of executives and top management like the CEO, the risk owners should continue to buy into ERM, and the function is expected to continue to mature.

ERM Improvements

Over the last 3 years, Company C has completely transformed its ERM function into a key enterprise resource providing value adding insights that have improved decision-making and made the organization more proactive in addressing risks. The changes began with the hire of a new CRO who was charged with taking an ERM organization that had almost become irrelevant and re-invigorating it to provide more value to the organization. The most notable improvements Company C has seen involve the automation of ERM to provide more useful and relevant data, becoming more proactive with the development of leading KPI's and an expansion of the scope of their ERM process to include the whole enterprise as opposed to just select business units.

Process Improvement 1: Automation of ERM Process

The most significant improvement Company C has tackled is the automation of their ERM Process. They are automating their process through the purchase of a new governance, risk and compliance software. Historically, the ERM department operated through manual spreadsheets and status reports, which were useful but not the most effective or efficient. Because of the manual effort involved in reporting, risk information tended to be shared at a very high level. There was a desire at the board level to have more in depth discussions around critical risks. When the new CRO arrived, she was tasked with refreshing the entire ERM process and quickly recognized that improving the quality of risk information would be the most important factor in reinvigorating the ERM process. Analyzing the data to provide better insights was one of the biggest challenges they would face. The volume of data to be analyzed meant that a manual approach would be too time consuming. An automated process would be more efficient and would provide more insightful and timely risk information resulting in more prompt action on critical issues, and improved decision making overall.

With automation, the company was able to revamp reporting to facilitate a more effective risk dialogue and focus on the topics that are most pressing and potentially most disruptive. It was even noted that the last board meeting required extended time because of the addition of a more in-depth risk discussion. The improved focus on risk also brought forth at the senior management levels an increased level of accountability for effective risk management. While the company has already seen significant benefits, the process has taken some time and is still a bit of a work in progress. Company C notes that they are continuously monitoring and making improvements to their process, but they are very satisfied with the progress and direction they have made to date.

Process Improvement 2: Inclusion of leading Key Performance Indicators (KPI)

Another improvement that was made at Company C was the inclusion of leading KPI's to change the focus of risk management to be more predictive. In the past, Company C's risk management consisted of acting on events that were currently occurring or reporting on events that had already occurred. The performance indicators they used to report these events were all lagging. In order to better their ERM program, they needed to become sensing and manage risk beforehand rather than reacting when an event occurs. Data analytics will be a huge part of being able to achieve this improvement, as predicting future events is a directly related to being able to analyze the risk environment. One of the ways they hope to achieve this is to add a new team member to focus on data analytics. This will help them with organization and quality of data which can then be used to develop leading KPI's and proactive strategies to manage risk. Although this will require additional company resources, the benefit of proactively managing risk is expected to be worth the investment.

This change was related to the shift to greater automation of the risk reporting. As the CRO and the Risk Council considered the automation of data collection, they also considered the value of analyzing all that data in order to make better predictions about risks. While the ERM department has not yet added this new team member with data analytics skills, it has already received approval for the position. It is anticipated that there will be a very positive reaction to having additional capabilities in the field of data analytics and it will be an important step in the evolution of the ERM program.

Process Improvement 3: Expanded Scope of Business in Risk Council

The last improvement this firm is undertaking is expanding their ERM program to include all parts of the business. At the outset, the ERM team was selective of the business units included in the ERM program as there was a desire to focus attention and resources on those areas with the greatest potential benefits from improved risk management. Now that the value of ERM is being realized throughout the firm, more business units have begun requesting help from the ERM department. The department is now expanding into being more involved with project management where they are analyzing the risks associated with specific projects. This change, like the move to automate and employ data analytics represents a natural evolution for the ERM program. It also represents validation of the ERM team's efforts to date. The organization sees value in the ERM work being done and is seeking to expand the involvement of the ERM team across the business, and to increase the resources devoted to ERM., The only restraining factor to increasing the scope of the ERM program is the manpower. This will soon be alleviated with the addition of new positions to cover the increased scope of the program. It is expected that the ERM organization will be up to full complement within three to nine months.

APPENDIX D

Company Overview

Company D is a business holding company whose subsidiaries provide supplemental health and life insurance in the United States and overseas. This insurance company offers coverage that provides a layer of financial protection against income and asset loss. Company D has a market capitalization of $38 billion and revenue of $22 billion.

Overview of ERM

ERM Function

At Company D, there is an ERM team for each of its three subsidiaries. Overseeing each risk team is a risk committee, and all risk activities are aggregated with the global risk committee which acts as a governing body for the three subsidiaries. The CRO leads the ERM function and is also the chair of the global risk committee. The CRO reports to the Chief Financial Officer (CFO) and the Audit Committee (AC). Below the CRO, is the Global Risk Officer (GRO) who oversees eight personnel in the United States subsidiary. The GRO is responsible for corporate level activities that support each of the local functions such as Finance, Treasury and HR. The risk team in the US focuses on operational risks, as well as governance activities, such as developing policies and reporting risk information.

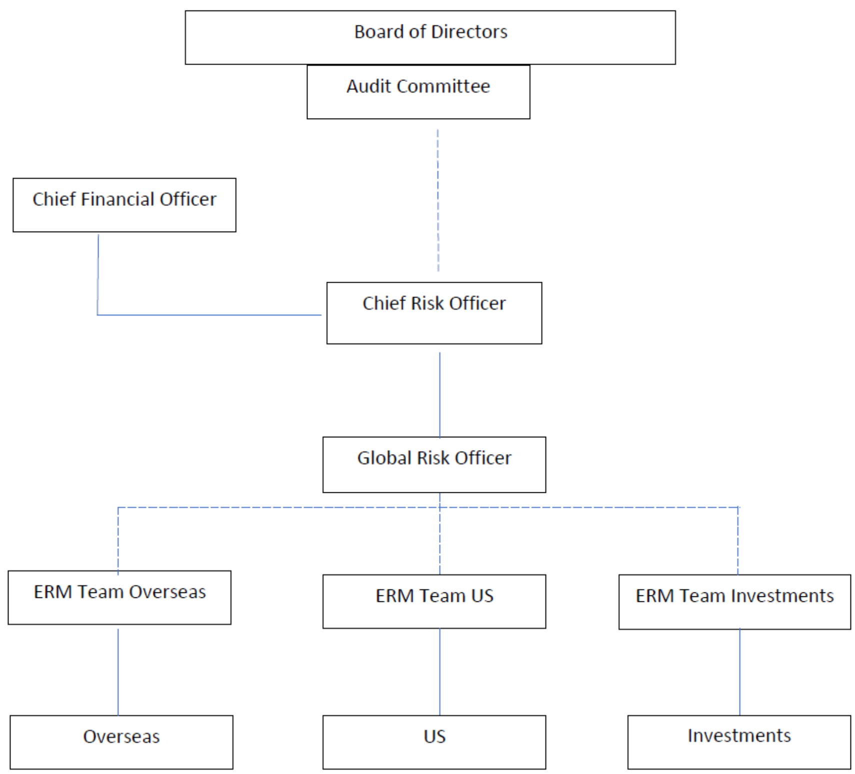


Diagram 1: ERM Reporting Chart

Strategy and Objective Setting

At the Company, the objectives of the ERM team are closely linked to the strategy of the overall organization. Six months prior to the annual business planning meeting, senior management informs the ERM team of the Company's objectives and new initiatives for the upcoming fiscal year. When preparing for the business meeting, the Risk Management team conducts a risk assessment, looking at individual strategic initiatives of the organization. The risk assessment seeks to answer the following questions for each strategy:

- What risk does this mitigate?
- What risk is created? and
- What are the risks to effectively executing the strategy?

For example, automation is a new strategic initiative that creates opportunities and risks. Therefore, the ERM team would guide a discussion around how the risks related to automation may affect the company overall.

From the top down, the CRO is heavily involved with prioritizing the risks to be addressed. Company D recently changed its organization structure, breaking down their ERM departments into more local teams using risk liaisons, instead of being strictly, US and-overseas teams. Some of the risk team's top ERM initiatives for the upcoming fiscal year include building and expanding their risk liaisons through the organization and creating more first line ownership of risks in their areas of responsibility. These are all efforts to build upon the foundation of promoting risk culture awareness.

Risk Identification & Risk Assessment

Company D's risk identification process involves both top-down and bottom-up approaches. This process is conducted mostly through surveys and interviews beginning at the top of the organization. These interviews include 54 employees at the Senior VP level and above, along with 5 members of the Board of Directors. The questions are very strategic focused, specifically on the risks affecting corporate objectives. The goal is to gain a high-level view of the risks that could jeopardize the achievement of business objectives. The bottom-up approach uses Risk and Control self-Assessments (RCSA) to different process owners across the subsidiary with quarterly surveys to keep them updated.

Impact Criteria

Impact Rating	Impact Criteria for Business Risks						Impact Criteria for Project Execution Risks		
	Financial	System Availability / Business Continuity	People	Customers	Compliance / Legal	Brand / Reputation	*Schedule Impact*[2]	*Cost Impact*[2]	*Financial Impact (Benefits)*[2]

Image 1: *The ERM team uses top-down and bottom-up approach to identify risks that would impact the achievement of a specific strategic initiative.*

The objective of the frequent surveys is to track as much data as possible, including economic data. Economic and financial data are used to develop key risk indicators and key performance indicators

The ERM team assesses the identified risks by likelihood and impact, using a five-point scale for each. For likelihood, a one would be rare and a five would be frequent, which they consider happening ten or more times a year. Impact is also on the five-point scale with one being minor and five being extreme. These are both then displayed on a heat map and captured into the risk register which is shared more broadly within the organization.

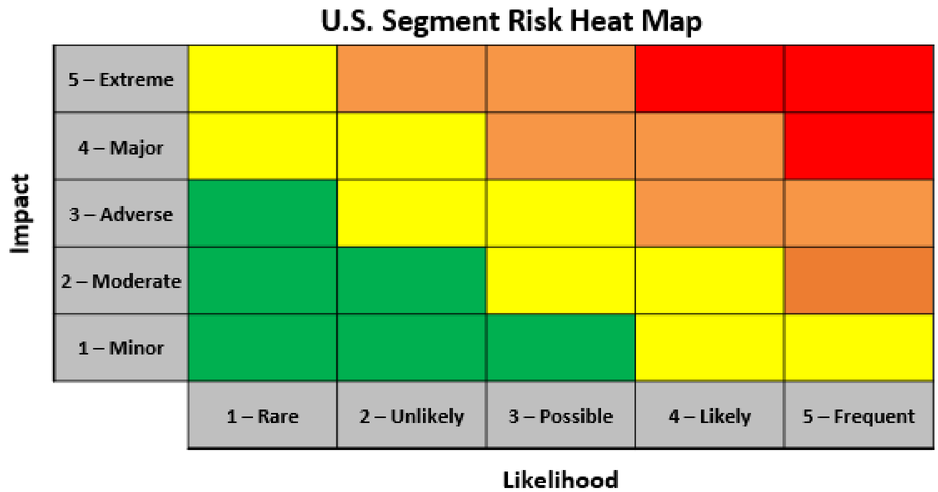


Image 2: The five-point scale of Impact and Likelihood is used to create a risk heat map. This helps to portray the top five risks.

The process owners who participated in the survey are responsible for identifying any changes in controls, organization, or regulation. In addition, vulnerability and the speed of onset are also considered. Further follow-up and reassessment of risks are conducted on a quarterly basis, or when trigger events occur. Specific trigger events are identified using the following methods:

- Issues reported in internal or external audits and exams
- Breaches in Key Risk/Performance Indicators limits
- The introduction of new strategies or initiatives
- Material system changes
- Sox updates

When any of these events occur, a follow-up interview will be scheduled, and the risk management team will reassess the risk exposure and gather related information. Ultimately, it is the risk owner's responsibility to perform a sufficient review to determine whether a trigger event would require changes to the risk and control register.

Risk Response

The risk register lists risks and risk statements as well as the risk owners that have primary responsibility for each risk. Risk owners are those who own the process that creates the risk, and their responsibility includes executing mitigation plans. The risk owner's responsibilities include developing the risk responses and executing the mitigation plan. The top-level ERM team's role in risk response is to decide if the proposed mitigation plan is appropriate based on the Company's risk appetite. For significant exposures beyond the scope of the business unit, the ERM team is brought in to consult about how to respond and mitigate the risk event. The ERM team would also be responsible for issuing a standard statement regarding the event. Generally, the ERM's function is to review and challenge responses of the business units. Risk owners report risk updates monthly to the ERM team, and they are accountable for communicating to higher level ERM employees. In each subsidiary, department risk owners are assigned for specific duties, and are held responsible for risks affecting their vertical.

Communication and Monitoring

The U.S. segment of Company D uses a dashboard to connect risks to specific owners and to monitor the results of risk management activities. The updated dashboard is communicated to senior management and management committees monthly and to the board quarterly. The granularity of information increases as the individual's involvement in the design and implementation of risk mitigation processes increases. Risk owners report to the ERM team regarding the specific business unit-related risks and the risk management process monthly.

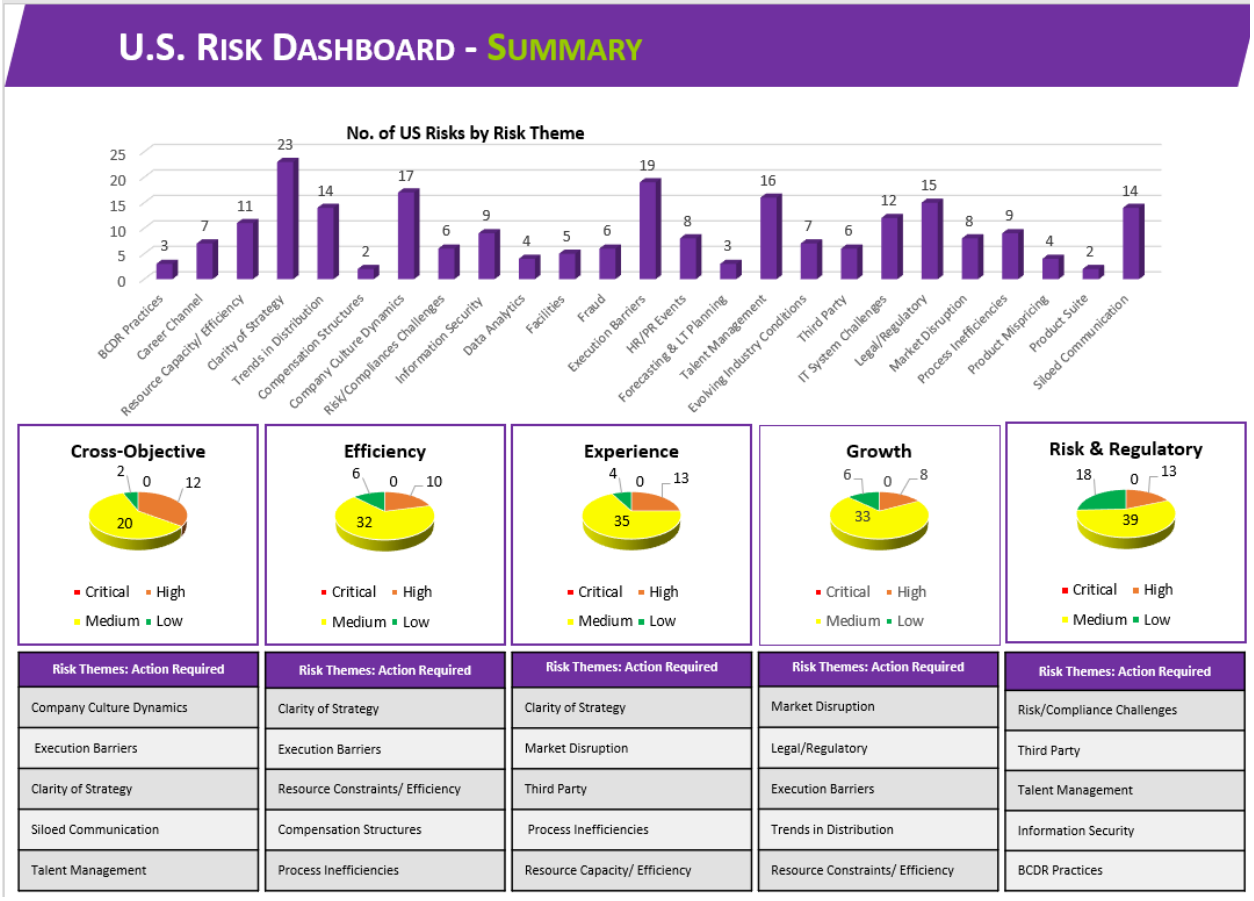


Image 3: The company's dashboard displays the number of risks by risk theme (bar graph) and ties the risks back to the multiple objectives. Each pie chart represents the company's objectives.

Risk Culture and Leadership

Senior management has been very supportive of the ERM process and this is demonstrated by welcoming the ERM team in the business planning process. There are channels in place for the reporting of risk concerns, including the use of department leaders as risk liaisons to be the "eyes" and "ears" of the ERM team. The Department leaders report risk information to the ERM team in order to provide for an enterprise view of risk. To further the risk culture and leadership, the ERM team is working to design and implement risk management training that would teach the risk owners how to develop their own risk controls and risk management plans independent of the ERM team. Currently, training is available for management on the risks, controls, and mitigation plans of the company. The new employee orientation also includes a segment on risk management. The next step in promoting more effective risk management is linking incentives to risk ownership, such as including risk management in an employee's performance evaluation and incentive plans. The goal for the risk culture is to have everyone consider themselves a risk manager within the organization, not just those with the "ERM" title.

ERM Improvements

Company D focused their improvements on risk assessment and the ownership of risk throughout all levels of the company. They hope that risk ownership would add an increased level of knowledge of risk which ultimately tie to the company's strategy. Company D's improvements centered around a focus on bottom-up risk assessment, adding risk liaisons to business units and adding risk management to their capital analysis.

Process Improvement 1: Focus on Bottom-up Risk Assessment

This process improvement was initiated to increase the focus on operational risks and ensure that there was an organized process administered by the ERM to gather more detailed information. Previously, the entity mainly worked with the top levels of the organization to perform its risk assessment. The improvement to assessing risk was initiated by both the Chief Risk Officer (CRO) and President of the organization to create a single process flow with a focused risk management message that would resonate with employees throughout the organization. The bottom-up approach uses surveys which are administered to different process owners across the subsidiary quarterly. The objective of the frequent surveys is to track as much data as possible, including economic data. It took approximately nine months to incorporate the staff at the business unit level in the risk assessment process. The company continues to use top-down risk assessments, but the results are combined and similarities and variations between the top and bottom of the organization are analyzed.

Process Improvement 2: Adding Risk Management to Capital Analysis

Company D also has made a conscious move to involve more strategy and risk management staff in capital analysis decision making. They now include employees from the ERM and Strategy functions in the annual planning process. The objective was to involve the ERM department from the beginning to facilitate the identification of the most significant risks involved in a proposed project and highlight potential obstacles that may have been overlooked. When the strategy team brings in the Risk department, they are focusing on three main things: what risks are being mitigated from the project, what risks might be created / intensified, and what project execution risks stand in the way of achieving its objectives? This information is used to create a risk profile for the project which applies a different strategic lens to proposals. Feedback from senior management has been very positive, specifically because the addition of the risk profile gives them a “more holistic view of data points to use in decision-making.”
The risk department was first contacted to assist with annual planning two years ago, and their involvement has increased each year. Last year, the ERM Department was engaged by the Process Excellence Office to assess risk on smaller scale projects before they start. By the start of this year, the team has been involved in the pre-decision process for all large- and small-scale projects. It should be noted that with this increase in responsibility comes the need for more staffing. The company plans to hire more employees in the risk management function to keep up with the demand.

Process Improvement 3: Adding Risk Liaisons to Business Units

The last process improvement the company has been working towards is assigning Risk Liaisons (Risk Champions) to business units. These would be employees embedded in the first line of defense to focus a part of their time (20%) on risk management activities centered on their specific vertical. The Senior Manager of ERM identified the need to have a Point of Contact (POC) for employees within each department that have questions regarding risks. The goal is to train at least one person per department to be the “go-to” person or risk liaison, and eventually have departments conducting their own risk assessments. The risk liaison in each unit can help answer any questions, assist with external auditors, and attend training to improve their skills in risk management. To evaluate capabilities, risk liaisons of each business unit were surveyed to see how well they understand the risk management process, and the risk appetite for their unit. The results found some inconsistencies with some staff having a very strong understanding of risk management, where others did not have an understanding of the basics. As the program progresses, there will be more training and workshops to improve skills of all liaisons.

APPENDIX E

Company Overview

Company E is a company in the Advanced Technologies sector. Company E has built its good reputation through contracts and long-term relationships with the United States government as well as other public sector agencies. The most substantial part of their business operations and employee footprint is in the United States. They engage in the entire production process for their products, including research, design and manufacturing.

Overview of ERM

ERM Function

The ERM team consists of four members, including the Director of ERM. The position as the Director of ERM at Company E entails not just the ERM process, but also acts as the Director of Corporate Sustainability. The Director of ERM reports to the Senior Vice President of Ethics and Enterprise Assurance, who in turn reports to the Board of Directors and the CEO. The company has a risk and compliance committee consisting of 15 executives that is responsible for feedback about risk assessment as well as control and mitigation. The ERM process has been in place since 2009, with the current Director serving since 2017.

Strategy and Objective Setting

The ERM process is linked to the strategy and strategy setting process in multiple ways. First, there are categories of risks that include significant drivers that are critical to meet the strategic objectives. Essentially, the commitments that are made in the three-year strategic plan are evaluated by testing the relevant risks that have effects on the strategic objectives. Second, the ERM team members are participants in the strategic planning process. This includes a process whereby the strategy team first achieves consensus about certain assumptions to be used in the planning process which would include financial, competitive and operational assumptions. Afterwards, the ERM team participates in ranking these assumptions, in regard to the risk they may have on the entity. In the process of shaping the strategy, management and executives engage with the ERM function through periodic meetings, canvassing strategic assumptions as well as reviewing the risk register. The management team also shares information from the risk assessments with the strategy team, which then uses this information when shaping the company's strategy. There is no set periodic time for the setting of strategic objectives. Each business unit itself is responsible for aligning the unit's strategy and strategic objectives with the organization's strategy as a whole. While shaping the strategy, the business units use shared risk assessment data.

Risk Identification

Company E uses multiple processes in order to identify their major risks. First, 1000 leaders at executive levels are asked to fill out a web-based survey. This survey focuses on how certain risks impact the achievement of strategic objectives, the likelihood of certain risks to occur and the confidence of a successful mitigation of these risks. This survey is also used to identify new and emerging risks. The questions are of direct nature and are updated annually. In addition, the ERM team works with internal audit in order to shape a risk identification and evaluation methodology as well as review these risk identification and evaluations. Finally, focus groups are used in order to identify additional new or emerging risks that may affect the company.

Risk Assessment

After the major risks for the organization are identified, these risks are to be assessed. In order to do so, the ranking methodology that was used in order to identify the most important risks is also used to assess the risk in regard to their impact on the ability to achieve the strategic objectives, their likelihood of occurrence as well as the confidence of mitigation of the risk. This is done in order to prevent the risks from disappearing in a list of ten to twelve risks. This also drives the consistency in the risk scoring model. While the organization has used heat maps in the past in order to show how the risks are assessed, they moved away from doing so and replaced the heat maps with risk matrices. In their risk matrix, the organization groups the risk elements under broader categories. Moreover, color-coding is used to show the evaluation of mitigation qualities. This includes input from internal audit plans, reviews of the risk response plans with the risk and compliance committees, and from executives that manage strategy and those who report to top executives. Generally, the risks are reassessed semiannually, while evaluations of the existing risks on the risk matrix are done on a quarterly basis.

Risk Response

In terms of responding to risks, the risks and risk elements are assigned to individual risk owners. The company uses a variable treatment plan for risks by evaluating mitigation effectiveness through a custom risk action plan, an internal audit or via a strategic business review. For custom risk action plans, risk owners develop a plan that clarifies the mitigation steps if a risk event would occur. In addition, the plan specifies a risk tolerance level and includes justification for the tolerance level chosen. The risk owner also needs to make sure resources are available to mitigate the risk. This includes reallocation of said resources, policies that need to be put in place as well as training for the employees. The ERM team can be involved in creating a risk response plan. This is done to make sure that the philosophy of the ERM process is carried out throughout the organization, particularly regarding the risk appetite and the logic of mitigation. The ERM team also conducts reviews and tests the effectiveness of the risk response plans. The effectiveness of aggregate risk responses is reported to the CEO, the leadership team and the Audit Committee.

Communication and Monitoring

Risks are communicated throughout the organization in the form of semi-annual reports. These reports include a narrative, dashboards and a display of the risk matrix as mentioned previously. The reports are received by the Board of Directors, in particular the Audit Committee, the CEO, the leadership team and the risk and compliance team and are discussed annually at the strategy meeting. In addition to these individuals, the report is also received by thousands of the top executives and risk owners. Moreover, the ERM team conducts briefings with functional leadership teams in order to communicate the risks throughout the organization. In regard to monitoring the risks, the company uses key risk indicators. The ERM team also considers reviews done by Internal Audit when monitoring the risks.

Risk Culture and Leadership

Senior management is very supportive of the ERM process as there is consistent participation in the risk governance process. It is also shown through an involvement of the executive leadership team, as well as the placement of important ERM topics on the agendas of management meetings. In order to report risk, employees can do so through the semi-annual risk assessment process, the employee consensus survey, which focuses on culture and workplace environment as well as the integrity of leaders within the organization, and through risk and compliance groups, which stimulate the dialogue about ERM. While there are no distinct performance metrics maintained for an employee's ERM responsibilities, good risk management is acknowledged by management. This is done for all types of risks, not just key risks. In 2018, executives completed a compliance risk assessment and in 2019, their performance evaluation will consider the effectiveness of their mitigation activities and efforts.

ERM Improvements

Company E has undergone multiple important improvements to their ERM processes to be able to provide management with the most relevant and current information on the risks that face the company. Their main improvements focus on the risk assessment and design process and the improvement of the connection between the ERM team and the internal audit function.

Process Improvement 1: Separation of Compliance Risk Assessment

In order to make compliance risk a higher priority, the company separated the assessment of compliance risk from assessment of other risks that affect the company. This change includes the incorporation of attorneys as well as non-attorneys in the compliance risk assessment which is accomplished through workshops and surveys. These workshops explore the impact and likelihood of occurrence of different compliance risks as well as the effectiveness of the known controls. Initially only attorneys were involved in these assessments, but it became clear that the wide range of standards and controls within the compliance area would require input from non-attorney subject matter experts. In order to be able to include non-attorneys, the General Counsel had to be convinced that this was the best path forward. That is due to the belief that compliance topics by nature involve legal reviews of how well the company adheres to laws and regulations as well as policies.

There was no direct event that triggered the change in the ERM process to regarding compliance risk assessments. The improvement was suggested in order to refresh a process that may have become less effective, and to centralize the management of compliance risks. The improvement process was led by the ERM team, which was supported by the Senior Vice President of Ethics and Enterprise Assurance. The improvement process took four months.

The process improvement has been well received by the Board of Directors and the CEO and there were no problems in implementing the change in the ERM process. This process will be repeated on a biannual basis, with the next one scheduled in the following year. In the meantime, the ERM team follows up with compliance risk owners on a regular basis and tracks the progress for control enhancements.

Process Improvement 2: Resequencing of the Strategic and Operational Risk Assessments

The assessment of risks of a strategic and operational nature was moved from the first to the third quarter in an effort to synchronize the assessment process with the strategic planning cycle. This is done to be able to provide the strategy-setters with more timely and relevant information. The shift is also in the wake of setting strategic priority and enabling strategy to get better support to help achieve the business growth strategy. The shift mainly focuses on the resequencing of the data gathering process. The process was necessary to eliminate randomized risk prioritization in regard to strategy. The main objective of the improvement was to reduce the inconsistencies in the risk assessment process as well as maximizing the relationship to the strategy department.

The process was initiated by the ERM team and was supported by the Senior Vice President and the CFO. As of the day of writing, the change process is still ongoing. Yet, the reactions by those affected by the process have been very positive. Thus far, the methodology is laid out and the process has been approved. The next strategic risk assessment will be this summer. Thus far, the process also yielded a more risk-aware culture throughout the organization. The key to keeping the change process running smoothly is keeping the risk governance body informed and maintaining constant communication to those affected by the process change throughout the organization.

Process Improvement 3: Tighter Alignment of ERM and Internal Audit

In order to form a tighter alignment and better coordination with the Internal Audit function, a strategy board consisting of the risk and the internal audit function was formed. This board has quarterly exchanges, at which data points on risk mitigation, which highlight processes that are “ripe” for the internal audit function to include in the audit plan, are discussed. For example, a risk mitigation area and process discussed at these exchanges may be to formalize or strengthen a process that addresses risk controls. This helps to make the process more granular in order to more properly scope the audit process and helps augment existing audit activities. This process also makes it easier to evaluate risk elements on the risk register and retire them, if necessary. In 2018, eight risk elements have been retired from the risk register as a result of this process. These risks do not disappear, they fall below the threshold for the allocation of additional management and controls and are therefore retired from the corporate risk register. The company also benefitted through a more granular approach to defining risks and a better identification of processes that are auditable by the internal audit function, rather than the more ad hoc business challenges. Another positive result from the change was increased accountability of the risk owners to both the ERM team and the internal audit function.

The project was initiated by a recently appointed Senior Vice President, as he wanted to analyze possible sub optimizations in the ERM process and find new opportunities for improving the quantity and quality of the collaboration between the ERM team and the internal audit function. During the process of aligning the ERM processes with the internal audit function, there were multiple hurdles, as there was an imbalance of information sharing, and adjustments to the scoping of the project that had to be made. The project in total took 6 months.

The internal audit function was somewhat skeptical of the change at first, but with more time and explanation, concerns were alleviated. The risk owners reacted very favorably to this change, especially those that work with both the internal audit function as well as the ERM team, as this made the process considerably easier for them. Both the CEO and the Board of Directors had positive reactions to the process improvement. While the company has not completed a full planning cycle with the process changes in place, the ERM team recognizes that there are other opportunities for making the ERM process more effective, particularly in the area of data analytics. The company plans to analyze greater volumes of data using higher quality data analytics processes to assist in the evaluation of controls.

APPENDIX F

Company Overview

Company F is a large beverage producer that operates throughout the world under 500 different brands. In its last fiscal year, it posted a total of approximately $35 billion in revenue with total assets close to $88 billion and a global employee count of over 100,000.

Overview of ERM

ERM Function

At Company F, the ERM function is led by the Director of Enterprise Risk Management who reports directly to the Controller. She is two levels removed from upper management, as the controller then directly reports to the CFO and the Audit Committee. The ERM team is now composed solely of the Director of ERM as the ERM process is being redesigned. The company employs a risk steering committee which provides direction and coordination to the ERM function. The Audit Committee of the board of directors is ultimately responsible for ERM. The chief auditor reports to that committee and is a strong supporter of the ERM program. Risk is seen as a crucial part of the audit plan, so risk information gathered by the audit department is then used by the ERM function as it consolidates the risks of the entire enterprise.

Strategy and Objective Setting

One of the key objectives for Company F's new ERM function is to move the focus of ERM from operational to strategic. Risk is one of the major inputs to the strategic planning process, and Company F is working towards prioritization of key risk areas identified by ERM in order to improve the strategy setting process. The strategic planning function has been undergoing changes just like the ERM function, and there is an active partnership being built between these two departments to align ERM and strategy setting. The new Head of Strategy is also a member of the Risk Steering Committee, which helps with the integration of ERM into strategy setting. Ultimately, the organization would like to have ERM considerations added to the standardized template that is used in strategy development. In this way, risks would be one of the key factors that would have to be considered as strategies are set.

Risk Identification

Company F uses three sources to develop its catalogue of risks. The three sources are internal data such as audit results, external data such as peer company risk disclosures and the existing corporate risk register. The risk register is updated twice a year through an interview process which takes more of a top down approach to risk identification. Approximately 30 interviews are conducted annually with key personnel, with each interview typically taking 30 minutes. Open-ended questions are used in the interviews to encourage each interviewee to express their individual views on risk. In addition, business leaders will report risk information on an ongoing basis, and that information will be compiled with the interview results to update the risk register. The risk register tends to focus on disruptive risks that could have a significant negative effect on the corporation. The horizon used is typically three to five years out.

Risk Assessment

Respondents to the annual interviews are asked to rank risks on a five-point scale and the results are then compiled into an overall ranking. The company uses a typical methodology of likelihood and impact to rank order the risks. Speed of response is a third measurement that they use for assessment of risk. Speed is defined as an assessment of the health of the approach they are taking to manage that risk. That want to make sure that the responses for these risks are sufficient and that the strategy to manage these risks is up to par with the likely consequence if it were to occur. Overall, they have a formula that considers health of approach, likelihood and impact to come up with an overall score to measure all risks against each other. A quadrant approach is used to portray these overall scores and to prioritize the risks based on the health of approach and the impact it could have. The new results are benchmarked to the prior year in order to compare how risks are changing from year to year. Company F made it a point to note that risk is necessary for corporate success, and that over management of risk could have negative implications for the organization. Instead the organization seeks to actively manage the risks it must take, and not just focus on mitigation efforts. Risks are aligned and weighed against strategy in order to get the most use of their ERM function.

Less Severe (Moderate severity and impact to company with moderate to well-developed management strategy)	Most Severe (High severity and impact to the company with a moderate to poorly developed management strategy)
Mature (Moderate to low severity and impact to company with well-developed management strategy)	Low Risk (Low Severity and impact to company with well-developed management strategy)

Graphic 1: Risk Measurement

Risk Response

The responsibility for risk responses falls to the business leaders who are closest to the risks. While risk owners across the business are not accountable to the ERM function, the ERM function does monitor data on risk responses and provide feedback to the business leaders to further improve risk responses in the future. In addition, for each of the top five risks, a playbook is in place that contains predetermined responses. In addition, these risks are evaluated and monitored using external feedback such as peer responses and investor chatter.

Communication and Monitoring

Historically, risk communication has been somewhat informal and limited. It has been a process of business units sending in risk information and the ERM group providing their analysis of that information. Now the company is beginning a system migration to provide a broader and ongoing exchange of information between local leaders and the ERM department. This is an area of major opportunity, as risks are not getting communicated at the optimal speed and there is no formalized process to provide leaders at different levels of the organization the feedback that they need to become better risk managers. Better organization is needed in order to sort and filter large amounts of data to enable better coordination of risk management activities throughout the whole company. The new Director of Enterprise Risk Management wants to have real time communication so that there are no gaps.

Risk Culture and Leadership

The company is transforming by the day, and its risk culture and support for the ERM process is gaining traction as well. Although there has been some upper management turnover, new management is realizing the value of the ERM program and beginning to develop an understanding of the value that risk management brings to the company. One example of this is in the new closer relationship between the Director of ERM and the Head of Strategy. There is also steady support for risk management education across the company demonstrated by the strong compliance policies and educational resources the company provides for ERM. There are also a number of interactive tools in place that promote risk awareness and provide a forum for employees to engage in the enterprise risk management process.

ERM Improvements

Company F's transformation of its ERM program began with a change in leadership and a focus on deriving more value by providing better risk information to improve decision making within the firm. The two main improvements involved shifting to a more long-term mindset focused on disruptive themes in order to become more proactive and embedding risk management within local operations to holistically look at risk throughout the firm. At the same time, this firm makes it a priority to monitor and evolve as events unfold. ERM is an ongoing process that must remain up to date in order to remain effective.

Process Improvement 1: Long-term Mindset Focused on Disruptive Themes

One of the improvements that Company F has taken on has been to approach Risk Management with a longer-term horizon. In the past, the focus had been on more short-term, operational or compliance type risks that typically did not affect the strategy or aid in long term decision-making. Taking a more long-term view will allow the company to monitor and adjust to emerging risks, giving it more planning options to deal with risks as they arise. The longer time horizon allows for better integration with strategy, as there is a common focus on planning and dedicating resources to addressing the disruptive risks the future may hold. This improvement has been accomplished mostly by shifting the dialogues used in the annual interviews to stimulate more discussion about the long-term risks and opportunities that could disrupt the way the company does business. This change in focus came as a result of suggestions from key leaders of the firm. When the new Director of ERM came on board, she interviewed these officials to get an understanding of their vision for the ERM program she was tasked to revamp. One of the overarching themes of the feedback she received was that the consideration of risk was way too narrow and needed to be expanded. The main objective for this change was to be more proactive and strategic in thinking about risk. They are now looking at events that can impact the firm further down the line so that they can put a plan in place now to manage that risk. That plan will be developed in coordination with the Head of Strategy, further aligning ERM with strategy. While this change has already been put in place, one of the things that still must be addressed is to develop an effective way to communicate long term risk in order to facilitate prompt action. Understanding the right amount of resources and the right timing needed to manage a risk that is further down the line is a tricky balancing act that still needs refinement, but the initial feedback and participation in the new framework has been very positive.

Process Improvement 2: Embedding Risk Management at Local Operations

The second major improvement that was made at Company F was to make risk management a larger priority at the local operation level to provide a more holistic approach to risk management. Beforehand, risk management work was inorganically embedded as another task to be done on top of regular day-to-day work. For that reason, it was never integrated as a value-added activity and was done more as a compliance activity. In order to provide a more valiant effort and participation, this firm is providing tools that are easier for local personnel to use. One of the initiatives they have put in place is a movement away from their old software used for tracking risk information into a cloud-based system which allows for easier risk communication and visualization to be seen at a more granular level. Providing with less, more relevant and easier to understand information allows for better understanding and management of risk at those local levels. They are also leveraging this new cloud-based system with dashboards that allow data input in order to complement the risks that were highlighted within the specific organization. In the past, risk was always self-reported and there was no main way to extract the information. Now, there is a visual dashboard which eases the communication and will help the understanding and communication of risk throughout the firm. This improvement was one of the main challenges that the new director of ERM wanted to take on. She wanted to devote more time to activities that give back. Beforehand, people did not see ERM as providing any value and it was not communicated so. People did not see a real benefit for providing high quality information. People at local operation levels needed to see that it was worth their time because it made their jobs easier. After the implementation, local leaders and operators are using this information to make more informed decisions and make their jobs a little easier. The value has been communicated, which overall makes the value of the whole ERM process known. This change needed to be achieved quickly because of an expiring contract on the old software they used. The ERM team saw that a change was needed and were further accelerated by the contract, but overall the program was seen success. Local leaders are seeing the benefits and are using the information to their benefit. The roll-out will be continuous as there are many parts to be added to this new cloud-based software. They hope to expand into mapping KRI's and metrics after they finalize the implementation of data input and visualizations.

APPENDIX G

Company Overview

Company G is engaged in the oil and gas sector in the United States. The Company's segments include Refining & Marketing, Retail, and Midstream. Company G has a market capitalization of $40 billion and total revenue of $97 billion.

Overview of ERM

ERM Function

The ERM Department is made up of two people and is led by the Capital Analysis and Insurance Director who reports to the Vice President and Treasurer, who in turn reports to the Chief Financial Officer (CFO). Since their most recent merger, there was a new director assigned, while the prior director is still on staff for historical perspective. There is an Executive ERM Committee that meets quarterly through an Executive Workshop. This committee includes the President and CFO of each business segment, General Counsel, and Chief Compliance Officer. The committee focuses on improved decision-making by discussing risk information such as: key metrics, industry events, company events, emerging risks, and new company initiatives related to each enterprise risk, rather than reviewing written risk reports with minor updates from year to year. There are also members of the strategy team that are included in the meetings to facilitate linking enterprise risks and strategy.

Strategy and Objective Setting

ERM at Company G involves executives and risk owners to develop ongoing strategy to manage risk. The company has consciously started moving from a “risk-focused” process to an “objective-focused” process, where the objectives are aligned with the company’s strategy. When analyzing risks, they now start with the Company’s objectives and identify causes and threats that could impact those objectives. Prior to this process update, their focus was solely on “top risks” with no direct link to strategy. The Director of Strategy now describes the Executive ERM meetings as “strategy discussions” and views them as an important link to the strategic planning committee meetings. Each quarterly risk meeting has a member of the strategy team there. There are some cross-functional teams that bridge organizational silos, focusing on long-term risks that could impact strategic initiatives. Periodically, these teams will make formal presentations to the board.

Risk Identification and Assessment

Company G uses an interview process as the main method to identify risks. Historically, the acquired company used interviews and/or surveys to identify and assess risks. A recent example from the acquired company included a survey to over 70 employees, mostly in management and top-level executives, where they were asked to identify the most critical scenarios in terms of likelihood and impact. Company G is also considering implementing surveys in their identification process, which was a practice that had been in place from the company they acquired.
Company G has identified 17 “enterprise” risks which they deem to be the most significant risks to the enterprise. The organization does not believe it is important to force a ranking within these top 17 enterprise risks, and instead looks at the risks within this group as being equally important. This way, the focus is on how the risks are being monitored and managed rather than having the focus on the placement within a heat map. These enterprise risks are updated throughout the year. In addition, in the case of a significant corporate event, such as a merger or acquisition, new risks that may have emerged in the process, will be identified and analyzed within a reasonable time period to make sure there are no gaps in the portfolio of risks. Quarterly Executive Workshops are also used to keep risks updated. Prior to the meetings, risk owners will meet with members from the ERM department to refresh their view of the present risk profile. At each quarterly Executive Workshop, committee members review the enterprise risks and select significant risks to be presented to the board. Each risk owner is responsible for leading the discussion about the specific risks within their area of responsibility.

Risk Response

The role in the enterprise risk process regarding risk response falls on the risk owners. The ERM team facilitates the process of identifying/documenting risk responses for the enterprise-level risks through the use of bow-tie diagrams. This has proven to be a useful tool for analyzing various risks throughout the organization, identifying opportunities for improvements within existing processes, and connecting the dots between enterprise risks. It has also involved subject matter experts (SMEs) from the frontline operations to executive vice presidents and has been used for both enterprise risks as well as business level risks. Each risk analysis session may include executives, managers, individual contributors, and SMEs, depending on the risk. The bow-tie analysis process starts with the risk as the "knot" of the tie and then moves to the left to identify and describe 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 preventative measures that the organization has in place determine whether additional measures should be implemented. At this point, there could be an evaluation of the actual analysis that then moves to the right of the "knot" to look at the potential consequences that would result after the risk event happens, and the plans the organization has in place to minimize the negative effects of the risk. An example of the Company's bow-tie analysis is below, excluding confidential information.

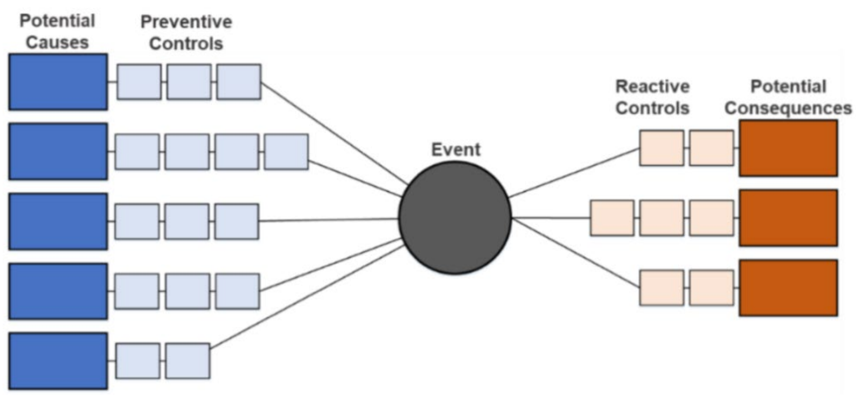


Image 1: Bow Tie Analysis

The Executive ERM Committee also relies on other assurance providers (e.g., Internal Audit, environmental and safety assurance groups) to evaluate the effectiveness of certain risk responses. After the occurrence of a risk event, a root cause analysis may be completed to evaluate the Company's response.

Communication and Monitoring

Enterprise risk updates are communicated in a President's report that is published quarterly and distributed to the board and the C-suite. This summary report uses the bullseye visual and a summary table noting changes since the last quarter. Separate from the ERM process, the Company also publishes a Citizenship Report which shows how it has been giving back to the community and reducing the environmental footprint from its business activities. This report includes the following metrics: economic impact, health and safety, environmental, governance and business integrity, and the number of people employed at the organization. It is important to give back to the community and environment in the Refinery industry, and Company G shows it is of much importance.

Risk Culture and Leadership

The ERM process has been in place for eight years at Company G and had been in place for almost 14 years at the organization it recently acquired. Management has been very engaged in the ERM process. In order to ensure continued engagement, Company G has a number of processes in place to educate leaders and employees about the risk management process. The ERM team has partnered with Internal Audit and held lunch and learn sessions to provide education on key risk topics. The ERM team also makes its services available at the request of the leaders of other departments. Input from the ERM team is also used by Internal Audit. The recent merger and ensuing integration process have also presented an opportunity to raise awareness of risks and increase the focus on effective risk management practices.

ERM Improvements
Company G's process improvements dealt with a change from the visuals they used for risk assessment and a change in overall culture of the company. They saw that the heatmap visual was not working and wanted to change to a more accurate visual. They also vowed to change the format of their executive workshops in order to provide better risk dialogue and ultimately change the entire culture of the firm to establish a risk community.

Process Improvement 1: Moving from Heatmap to Bullseye (And Bow-Tie)
Company G has recently made a change from using traditional heatmaps to now using 'bullseye' and 'bow-tie' analysis. The implementation process of both the bullseye and bow-tie analysis took approximately 12 months. The change came about because the ERM team was receiving feedback that the heatmap was illustrating a false sense of precision regarding likelihood and impact and did not allow for a range of possible scenarios. Senior ERM Analyst at the Company believe that "risks come in different sizes, regarding likelihood and impact, and the heatmap gave a simple visual but also gave a false sense of precision for risks." The analyst goes on to say that they wanted the discussion to focus on how the risk is managed rather than the placement on the heatmap, which is why they chose a bullseye approach to display the top risks. The bullseye visual is separated into three rings. These three rings focus on how the company manages the business with risks in mind. The far outer ring is for sector risks. Sector risks tend to be common to all companies in the specified sector (or industry), but the Company generally has little to no control over these risks. The middle ring is for value-creating risks; these risks could add value for the investors of the Company when properly managed through risk-reward analysis. This type of risk generally has both upside and downside potential and can differentiate companies within a sector. Lastly, the center is for "license to operate risks:", which are expected to be prevented and generally have little or no upside. An example of their transition from a heat map to a bullseye visual is below, excluding confidential information.

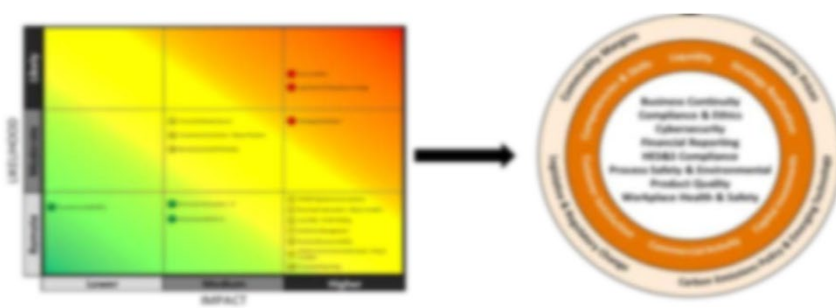


Diagram intentionally blurred

Image 2: Moving from Heat Map to Bullseye

To better understand how the bullseye risks are being managed, the ERM team facilitates a risk analysis session that results in the development of a bow-tie visual for each bullseye risk. The recent implementation of bow-tie risk analysis has proven to be a useful tool for communicating risk information throughout the organization, identifying gaps and opportunities for improvement within existing processes, and connecting the dots between enterprise risks. These sessions can involve subject matter experts (or SMEs) from the frontline operations all the way up to executive vice presidents, depending on the risk. Prior to the most recent process update, only executives and upper management were involved in the ERM process. An example of their bow-tie analysis is below, excluding confidential information. With the changes to the bullseye and bow-tie visuals, the feedback has been extremely positive because of the simplistic nature of these visuals. Some employees were reluctant to give up the heatmap, but now feel the bullseye is more intuitive. There is still work to be done on this front, including combining risk registers and visuals from the most recent merger into one. The ERM department would also like to meet with department heads to analyze risks at a more granular, business unit level using bow-ties.

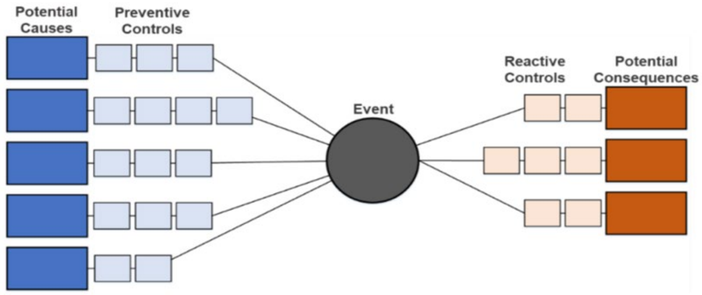


Image 3: Bowtie Analysis

Process Improvement 2: Changes to Executive Workshop Format

The next process improvement involves the change in format of the Executive Workshop. Originally, an Executive Workshop was conducted quarterly for each of the two publicly traded companies within the organization. These meetings would be facilitated by the Director of Capital Analysis & Insurance, who is the ERM leader at the Company, and there were about 30 to 50 invitees including executive level management. SMEs, who are responsible for executing risk mitigating activities, would meet before the workshop to review risk and strategy, and provide recommendations to be reviewed in the workshop. Unfortunately, the focus of the workshops tended to be on "risk list management" and "wordsmithing risk updates prior to reports being sent to the Board. Now, the Executive Workshop has a new look to it, with only about 10 to 20 members allowed to attend these sessions. These members include core ERM Committee members, who are the President and CFO of each business segment, the General Counsel, and the Chief Compliance Officer. Representatives from Strategy and Internal Audit are invited to attend, along with other invitees from time to time. SMEs who previously attended the Executive Workshop now meet during a SME pre-workshop to provide recommendations for the Executive Workshop. The Company also combined the two separate company quarterly meetings into one because of the overlap in attendees. The conversation in the workshops has now turned from refining risk reports to discussing opportunities to integrate risk into decision-making and existing processes. Other topics now covered in the Executive Workshops include emerging risks, management system gaps, and topics to present to the Board. Senior ERM Analysts noted that executive buy-in and support is a key success factor for the ongoing viability of an ERM program, which is why they made the change. There were unintended consequences from making the Executive Workshop more exclusive, one being losing the presence of the SMEs (discussed in next process improvement).

Process Improvement 3: Establishing a Risk Community

The third process improvement at the Company deals with the unintended consequence of eliminating SMEs from the Executive Workshop. After the workshop format change discussed above, the exclusivity of the meetings meant there was no formal, cross-functional forum to discuss enterprise-wide risk management practices. This is where the idea of establishing a "Risk Community" started. The Risk Community provides a means for business units and risk managers to share best practices and continually improve risk management systems to support risk-based decision-making. The Risk Community would meet quarterly with SMEs and risk managers in a cross-functional forum to discuss enterprise-wide risk management practices. The initiative was formally spearheaded by ERM team at the Company. The objectives of the Risk Community, include:

- ıdentify opportunities for improvement in the current risk management systems
- Identify and discuss emerging risks and opportunities that impact strategic objectives
- Analyze industry and business risk events relevant to the Company
- Share risk management best practices
- Integrate risk management into existing business and decision-making processes

The Risk Community is expected to be launched in the coming months, adding value to the way employees look at risk going into the future, and creating a tie from the Board to the operating units.

ABOUT THE AUTHORS

NC State ERM Practicum Team Biographies

	**Ashley Baker** is a graduate student in the Master of Accounting program at North Carolina State University where she is concentrating in Enterprise Risk Management. Ashley also attended North Carolina State University for undergraduate studies, receiving a Bachelor of Accounting in May of 2018. Upon completion of her degree and all four sections of the CPA exam, she will move to Charlotte to work in Assurance Services at RSM.
	**Carl Kreibich** is a graduate student in the Master of Accounting program at North Carolina State University, where he is concentrating in Enterprise Risk Management. Carl attended Campbell University for his undergraduate studies in Accounting, receiving a Bachelor in Business Administration with magna cum laude. He also was a member of the Men's Golf Team during his four years at Campbell. He is currently working on passing the CPA exam.
	**Marcos Melendez** is currently a graduate student in the Master of Accounting program at NC State University concentrating in Enterprise Risk Management. Marcos also received his undergraduate degree from NC State majoring in Accounting with a concentration in Financial Analysis. In his free time, he enjoys going out with friends, playing videogames and playing/watching all sports. He is currently working on studying for the CPA exam in hopes of passing all four parts before he begins work in the Fall. He will be working in the Audit department at Deloitte & Touche- Raleigh office upon graduation.
	**Ross Robison** is a graduate student in the Master of Accounting program at NC State University where he is concentrating in Enterprise Risk Management. Ross also worked with Dr. Mark Beasley as his Graduate Assistant for the 2018-19 Academic year. Before NC State, Ross graduated from UNC-Wilmington where he majored in Accounting, and was a member of the golf team. He is currently working to pass all four parts of the CPA exam. After receiving his Masters, he will be moving to Manhattan to work in the Advisory Department with Deloitte & Touche.