



SOCIETY OF ACTUARIES

ERM Symposium
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D2-Enabling ERM 2.0 with Technology

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ERM 2.0

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ERM is Like Seatbelts

**No help if not
buckled!**



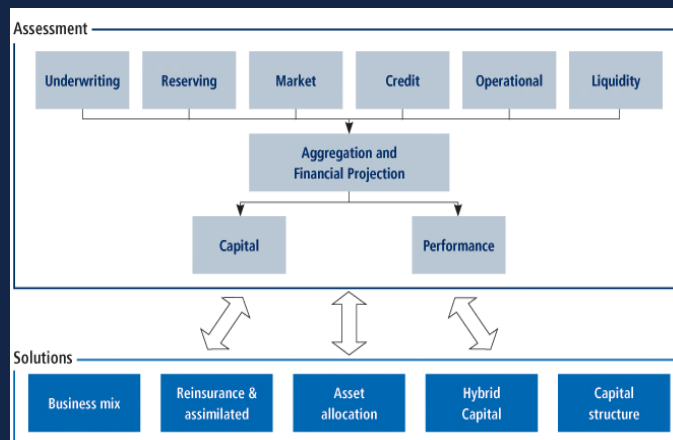
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Role of Risk Models



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ERM : Needs Models



But ERM is not the same as Models

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Role of Models in ERM

Risk Controlling

Models help to measure risk exposures

ERM **Models** provide aggregate risk & appetite

Risk Trading

Models provide price indication

ERM **Models** add consistent approach to risk margins

Risk Steering

Subjective Strategic choices to improve value

ERM **Models** add risk vs. reward point of view

Change Risk Management

Managing the risks from new projects, products, territories, etc

ERM **Models** add fitting into the existing risks

Credit Crisis & Models

ERM is not VaR (Jan 3, 2009 NY Times Magazine)

ERM is not a model

VaR is not a model

Risk Management



Models include Assumptions & simplifications

- Assumptions were wrong
- Simplifications were wrong
- Need diligent process to keep model usable

Model is like the windshield on a car

- Allows you to see what you need
- But you need to keep it clean
- Financial markets windshield wipers failed and their car crashed

No one thinks of getting rid of their car because the windshield wipers fail – **they just fix the wipers**

Models of Mortgage Securities

Missed the change in LTV

Missed the change in quality/income of buyer & deterioration of coverage ratio

Missed the Risk of broad housing price deflation

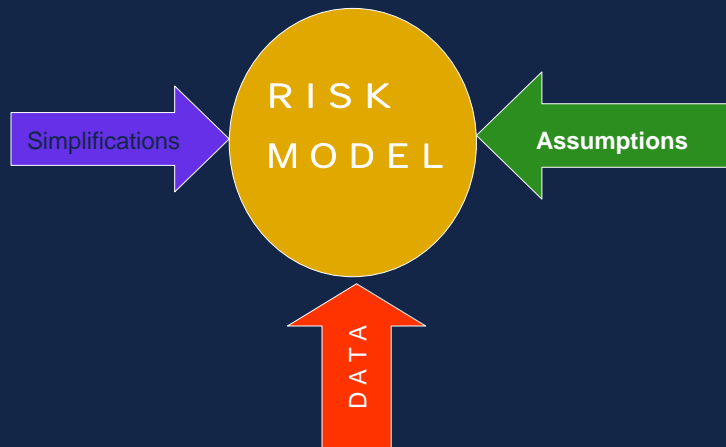
But was it the Models or the Modelers who missed?

Have you ever heard anyone claim that their car got lost?

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What Can We Learn?

Risk Models all have three primary components:



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What Can We Learn?

A mathematical model is a tool.

- **cannot and should not replace the practitioner's experience, judgment and business intuition.**

Major strategic decisions should be guided by Business knowledge and Common sense of experienced business leaders Informed by models.



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What Can We Learn?

A model must reflect business realities as closely as possible.

Using inappropriate models mechanically without exploring the applicability has been a serious issue

Multiple metrics and models should be employed, (VaR, CTE, Volatility, Scenario Testing, ...)



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What Can We Learn

The data that go into models should be validated, scrubbed and compared to at least one other independent source.

Regular review/upgrade of models and underlying technologies has to be carried out

Model correlation (risk are not as independent as we sometimes assume)



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Industry Practice – ERM & Models

	Qualitative ERM	Factor Model (RBC, Solvency 2, AM Best BCAR)	Capital Model	Value Model
How much Risk?	No idea of how risks compare to each other.	Risk Comparison using generic evaluation.	Comprehensive & consistent (but one dimensional) evaluation of risk.	Multi dimensional risk evaluation.
How Much Capital?	As much as peers.	Management cedes this decision to external body.	Going out of business approach.	Going concern approach.
How to Maximize Value?	Maximize Short Term Earnings. Cannot do trade-offs.	Maximize Short Term Earnings.	Risk Reward Trade-offs one year at a time.	Enhance sustainable earnings

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ERM 2.0 – Enabling ERM with Technology

Laura Taylor
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ERM National Practice Leader
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Defining the Terms

ERM 2.0

Firm-wide risk / reward optimization:

- Enabling analytical approaches
- Improving / aligning risk processes and governance



Defining the Terms

Webster's Dictionary

Technology

Noun

1. The practical application of science to commerce or industry.
2. The discipline dealing with the art or science of applying scientific knowledge to practical problems



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Current Risk Landscape

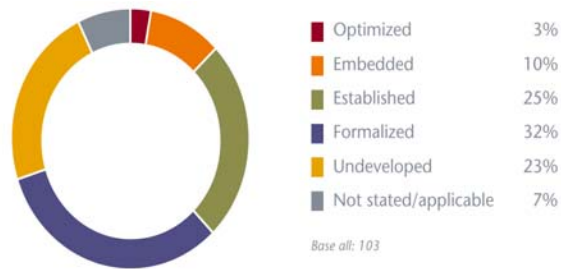
- Risk “bar” is getting higher and higher
- Margin for error getting smaller and smaller
- “Silo” risk management has lost its appeal
- Key external and internal stakeholders expecting enhanced risk management and asking a lot of risk-related questions
- Integrating risk management and core strategic planning processes is critical
- Companies at varying levels of ERM maturity
- S&P ERM rating announcement driving discussions with CEOs, CFOs and Treasurers



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Stage of ERM Development

In many organizations, the strategy and framework for ERM are still at a relatively early stage of development – only one in eight consider ERM to be integrated within the organization

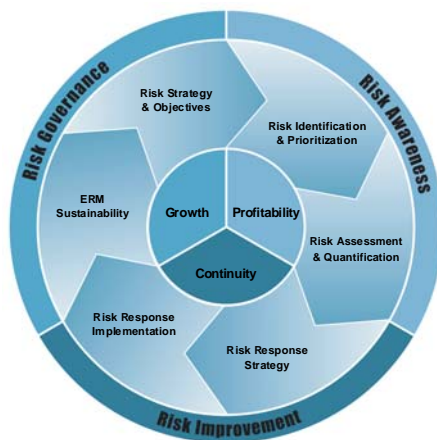


Source: Aon Global ERM Survey



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Driving Value through Enterprise Risk Management



ERM frameworks help organizations:

- Demonstrate **proactive understanding and management of risk**
 - Advance Management and Board-level understanding of existing business risks and results, and emerging risks and future prospects
- **Improve organizational health**
 - Enhance corporate governance
 - Streamline existing risk processes
 - Improve business decision-making
 - Support financial reporting
- **Gain competitive advantage**
 - Anticipate and effectively respond to risk
 - Improve the risk / reward ratio
 - Better allocate resources



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Evaluating Your Current ERM Program

- What are our current stakeholders asking?
- What are best practices for ERM (such as COSO, S&P, AS/NZS) and how do our current practices align?
- How do we better align the process with strategic planning?
- Where should a committee report, how often should it meet, and who should sit on it?
- How often do I report to key stakeholders and in what format?
- How can we integrate technology to leverage ERM processes?
- What tools and processes are best suited to track the progress of new initiatives?
- How often do we conduct risk identification and prioritization efforts?
- How do we quantify our risks in a more sophisticated manner and develop response evaluation frameworks?
- How do we validate the resource allocation to manage and mitigate critical risks?
- How do we evaluate the financial impact of new initiatives?



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Key Stakeholder Questions

Risk Awareness

- What are our top risks?
- What is their potential impact to our strategy?
- How is risk information communicated to the Board?
- How is our risk profile changing?

Risk Improvement

- What are we doing to manage our key risks?
- What key metrics do we use to monitor the risks? Who is responsible for the monitoring?
- Do we have the capabilities to execute this risk response strategy?
- Did the mitigation activity yield the expected results?

Risk Governance

- What is our risk appetite?
- Are we taking the appropriate amount of risk?
- Is there a senior level or Board committee on risk?
- How does management incorporate risk into its strategy development?

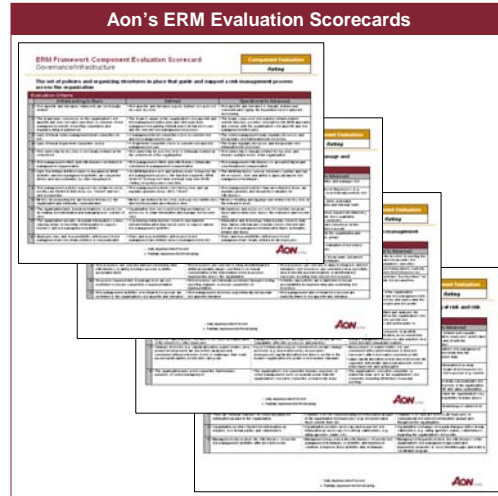


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Improving / Aligning: Determining What's Already There

Evaluate Existing Risk Management Activities

- Capture details of existing risk management activities and management decision processes
- Review various strategic, operational and financial documents
- Interview management
- Evaluate against standards, best practices and S&P criteria



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ERM Framework Review

1. Governance/Infrastructure

The set of policies and organizing structures in place that guide and support a risk management process across the organization

2. Process

The methodology, tools and techniques an organization uses to identify, analyze, measure, manage and monitor its key risks

3. Integration

The approach and tools used to include risk, risk management and risk-return information into management decision processes

4. Communication & Sustainability

The practices utilized internally and externally to raise awareness and enhance understanding of risk and risk management



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ERM Framework Review

1. Governance/Infrastructure

- Organizational structure, including roles and responsibilities
- Risk appetite and tolerance statements
- and procedures for risk management and key functions

2. Process

- Risk assessment and prioritization exercises
- Defined key risk and performance indicators
- Qualitative and quantitative risk analysis approaches

3. Integration

- Budgeting and forecasting techniques
- Cooperation among compliance, internal audit, risk management
- Influence of risk sensitivity on financing, business decisions

4. Communication & Sustainability

- Disclosures and regulatory filings
- Board/management reporting frameworks and templates
- Benchmarking



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Improving / Aligning: Develop Implementation Strategies

Develop ERM Implementation Strategy

- Details customized and practical strategy for leveraging existing strengths to close risk management gaps and achieve target ERM maturity
- Details resources and timing required to complete each recommendation

The slide displays a list of recommendations for ERM implementation, including:

- Recommendation 1:** Establish an ERM strategy, implementation plan and governance framework.
- Recommendation 2:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 3:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 4:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 5:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 6:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 7:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 8:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 9:** Develop an ERM strategy, implementation plan and governance framework.
- Recommendation 10:** Develop an ERM strategy, implementation plan and governance framework.

 Below the list is a progress bar with a 'Progress' indicator. To the right, there is a table with columns for 'ERM Current State', 'ERM Target State', and 'Key Action Items'. The table lists various ERM components and their current and target states, along with specific action items for each.



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