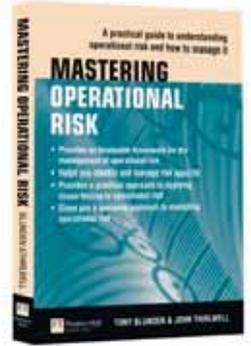


Mastering Operational Risk

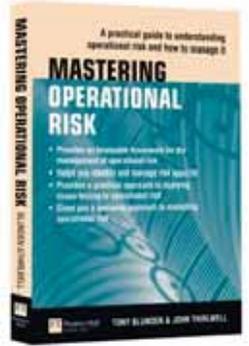
Tuesday 14th September 2010

Agenda



- ▶ Operational risk: How to break it down
- ▶ Is the CEO the operational risk manager?
- ▶ Business benefits of operational risk
- ▶ Operational risk and people risk
- ▶ Advancing the OR framework: Qualitative modelling

Operational Risk: How to break it down?

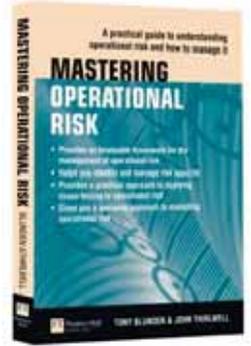


The challenge: break down OR so that it is meaningful and digestible

We considered a number of possibilities:

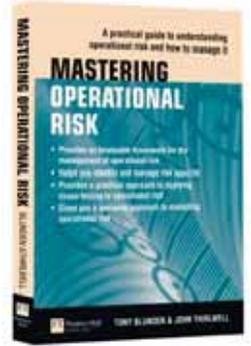
- ▶ The Framework, Putting the framework to work
- ▶ History, Framework, Putting it to work
- ▶ History, Framework, Putting it to work, Mitigation, Business case

OR: Breaking it down

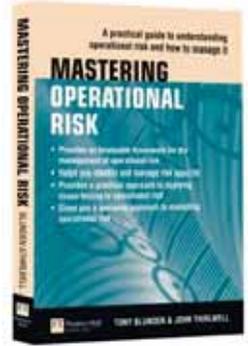


- ▶ Part 1: Setting the scene
 - ▶ What is OR?, The Business case
- ▶ Part 2: The Framework
 - ▶ Governance, RCA, Events and losses, Indicators
- ▶ Part 3: Advancing the framework
 - ▶ Reporting, Modelling, Stress tests and scenarios
- ▶ Part 4: Mitigation and assurance
 - ▶ Business continuity, Insurance, Internal audit
- ▶ Part 5: Practical operational risk management
 - ▶ Outsourcing, People risk, Reputation risk

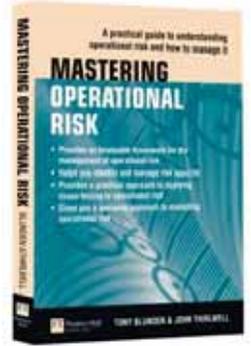
What is operational risk?



Who does operational risk?

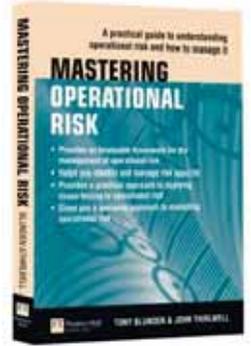


Board



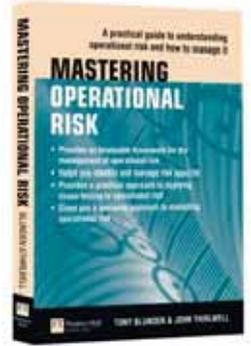
- ▶ Leadership
 - Culture
 - Tone from the top / tune in the middle
- ▶ Strategy and objectives
- ▶ Appetite
- ▶ Risk Committee

Risk taking and risk oversight



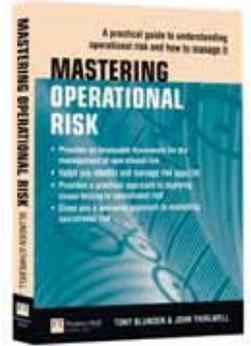
- ▶ Risk is a concept not a function
- ▶ Risk taking
 - Who's involved?
- ▶ Risk oversight
 - Who's involved in risk oversight?
 - Why should risk functions be independent?
 - Who should the operational risk function report to?

Risk assurance



- ▶ Independent
- ▶ Role of external audit
- ▶ Internal audit
 - Objectives
 - Status and position in the firm
 - Audit Committee
 - Priorities – R/G rather than R
- ▶ Internal audit as consultant
- ▶ Internal audit as investigator

Business benefits (1)

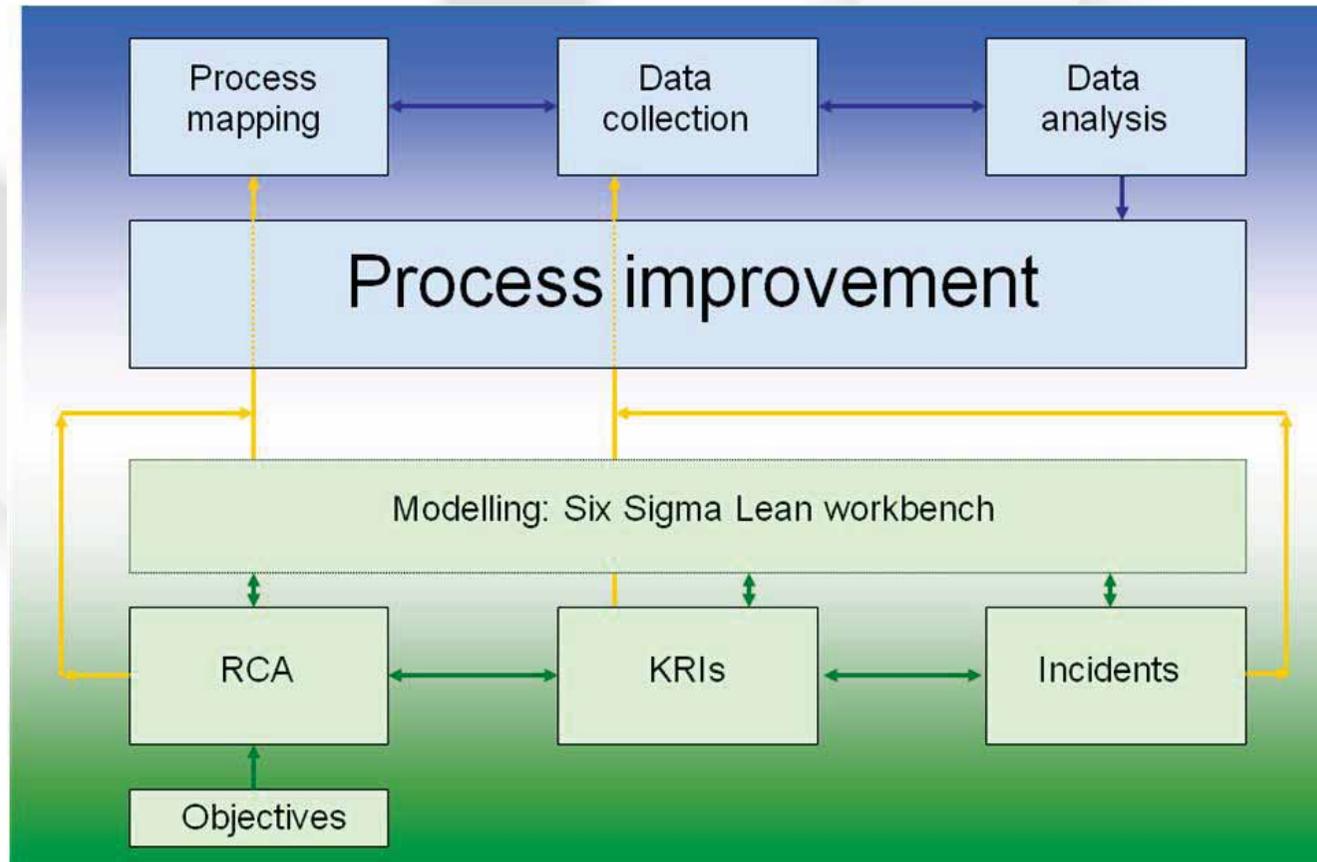


Talking to and addressing the senior management agenda:

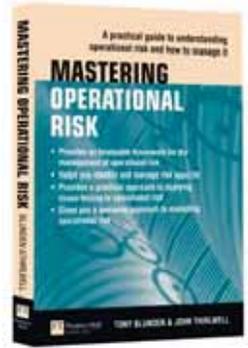
- ▶ Understanding the operational decisions' context
- ▶ Differentiating your operational risks
- ▶ Assessing past problems
- ▶ Knowing where you are now
- ▶ Allocation of capital on an OR basis
- ▶ Getting the right information
- ▶ **The Alternative:**
The business dies – either slowly or suddenly

Business benefits (2)

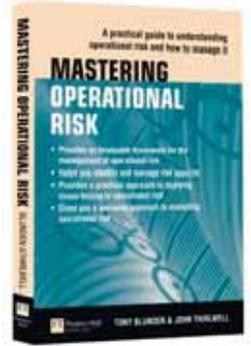
- ▶ But get it right and you have significantly improved business optimisation:



- ▶ And, you don't have to pay the lawyers!

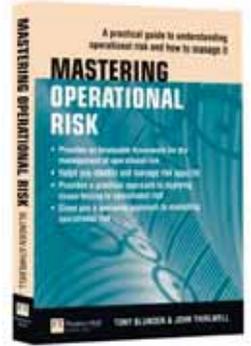


People risk (1)



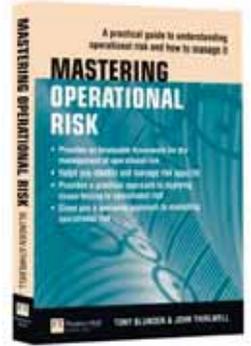
- ▶ Operational risk is the **risk of loss from inadequate or failed** internal processes, **people** and systems or from external events.
- ▶ 'Operational risk is an attempt to frame the unframeable, to assuage the fear about the uncontrollable rogue others and to tame the man-made monsters [of the financial system]' (Michael Power 2009)
- ▶ '80% of operational risk is down to human error or management failure.' (J. Howitt, PRMIA, 2004)
- ▶ People need a sense of belonging – herd instinct
 - > the crisis

People risk (2)



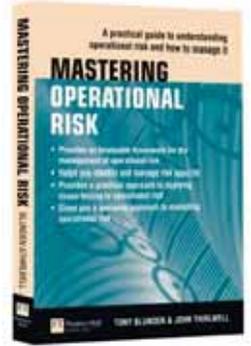
- ▶ The people risk of risk management
- ▶ The people risk of the CEO
- ▶ The people risk role of the CEO
 - Culture > what we mean by excellent behaviour
 - The CEO's behaviour (tone from the top)

People risk controls and indicators

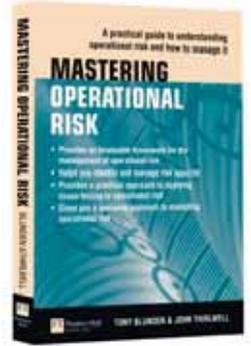


- ▶ Behaviours and objectives as drivers for key people risk controls
 - Selection
 - Appraisal and performance management
 - Training
 - Reward
 - Succession planning
- ▶ People risk indicators

People risk and HR



- ▶ Is HR transactional or a risk function?
- ▶ Much risk is managed by good HR. How much is managed by a good HR department?
- ▶ Understanding and predicting risk is highly dependent on understanding human and organisational behaviour. HR has a role as senior management's guide.
- ▶ Would the HR Director be on the short-list for CEO or COO?

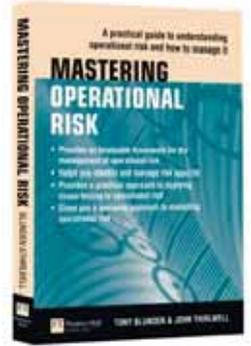


- ▶ All risks should be viewed through a people lens and all people issues viewed through a risk lens



- ▶ Good people management
is good risk management
is good operational risk management

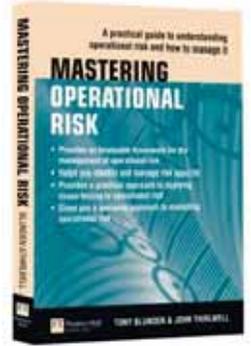
Advancing the OR Framework: Qualitative modelling



Section Agenda

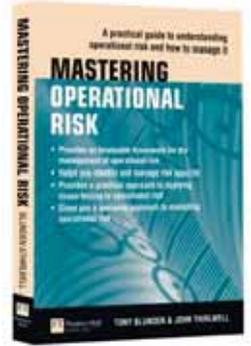
- ▶ What might be the problems?
- ▶ What data do we need?
- ▶ Garbage in – garbage out
- ▶ How might it work?
- ▶ Useful reports
- ▶ Other ideas

Ideally we will want to ...



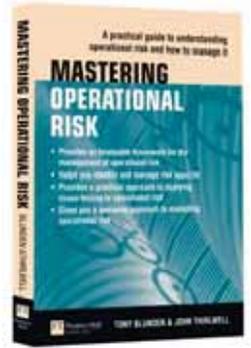
- ▶ Use our existing data
- ▶ Mathematically link risks and controls
- ▶ Introduce practical risk management
 - Convert the qualitative risk scores to monetary values
 - See by how much (monetary amount) our controls reduce our risk profile
 - Prioritise actions by monetary risk impact
- ▶ Not wait until we have achieved reasonable loss collection

Using qualitative analysis – problems or benefits



- ▶ Business judgement is good indicator of future – all businesses still use this
- ▶ Control failure assessment is directly linked to anticipated risks
- ▶ More directly assess high impact/low likelihood risks specific to your firm
- ▶ Provide quantitative challenge to subjective RCA
- ▶ Use your RCA data

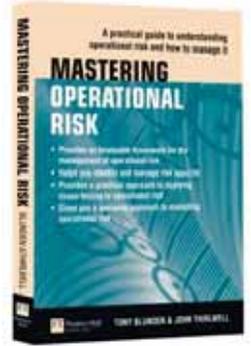
What data is needed for qualitative analysis?



Standard risk and control assessment data:

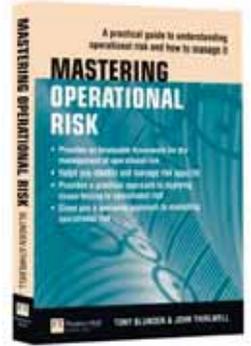
- ▶ Risk impact
- ▶ Risk likelihood
- ▶ Risk correlations
- ▶ Controls and their performance characteristics
 - Design, performance, key control, preventative, detective, mitigation effectiveness

Challenge Input

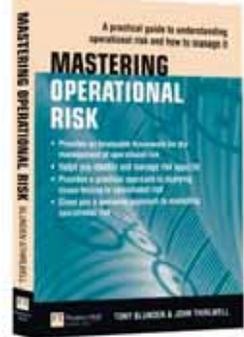


- ▶ Challenge and revise risk impact scores – experts differ in their opinion
- ▶ Challenge assigned likelihood – availability bias is of significant concern
- ▶ Challenge control assessments– control owners tend to over estimate efficiency and risk owners underestimate
- ▶ Review the results and revisit the model inputs

How might it work?

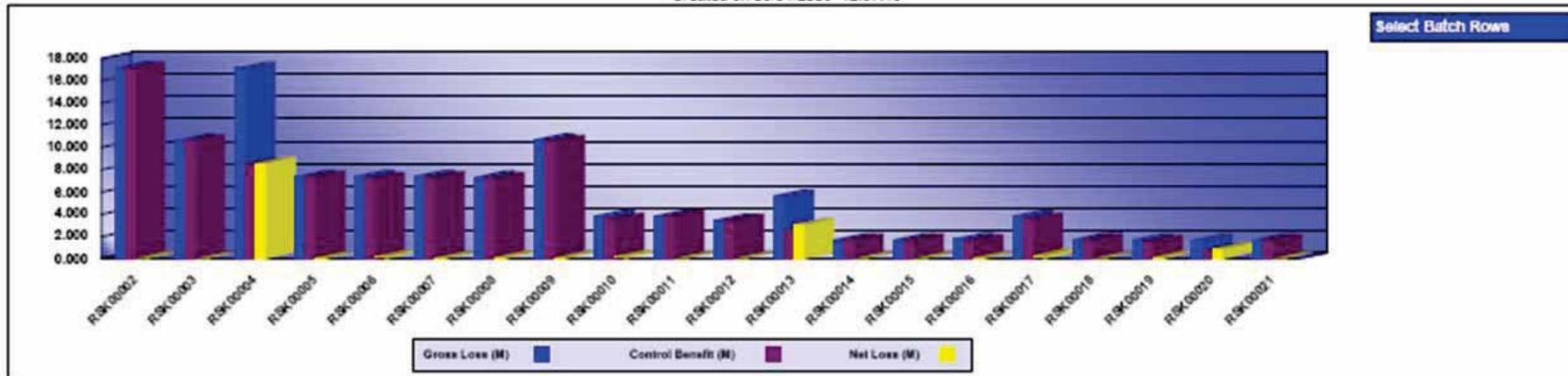


- ▶ Set up generic RCA data ranges
- ▶ Compile risks and assign likelihood frequency and impact
- ▶ Compile controls and assign failure probabilities
- ▶ Assign controls to risks
- ▶ Apply correlations between risks if known
- ▶ Run Monte Carlo Simulation
- ▶ Assimilate Results and Reports

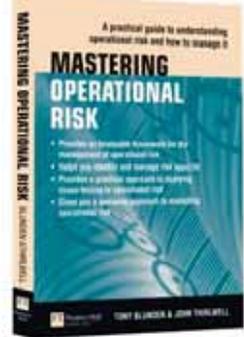


Potential gross and net loss Figure 8.7

Risk Results [Sim1 99.9 50000 seed1(50) - Session: 1 Sample Retail Bank(14) - Quantile: 99.90%]
 Time Frame Factor: 1 - Iterations: 50,000 - Seed: 1
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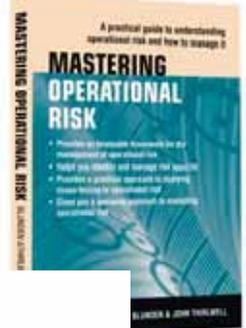
| Risk | Risk Owner | Gross Loss GBP (M) | Control Benefit GBP (M) | Net Loss GBP (M) |
|---|------------|-----------------------|----------------------------|---------------------|
| RSK00002 Failure to attract, recruit and retain key staff | TB | 17.203 | 17.162 | 0.041 |
| RSK00003 Financial advisors misinterpret / fail to understand the com | CK | 10.661 | 10.645 | 0.016 |
| RSK00004 Poor staff communication | DA | 17.114 | 8.518 | 8.596 |
| RSK00005 Failure to understand the law and/or regulations | CK | 7.402 | 7.345 | 0.057 |
| RSK00006 Poor detection of money laundering | AN | 7.421 | 7.233 | 0.188 |
| RSK00007 Insufficient funds/deposits to cater for lending activities | TB | 7.416 | 7.323 | 0.093 |
| RSK00008 Over-selling credit cards | TB | 7.335 | 7.219 | 0.116 |
| RSK00009 Over-deployment of management resources on regulatory issues | CK | 10.690 | 10.581 | 0.109 |
| RSK00010 Failure to capture market opportunities | CK | 3.833 | 3.608 | 0.225 |
| RSK00011 Over-dependency on outsourcing | DA | 3.831 | 3.831 | 0.000 |
| RSK00012 Weakness in information security system | DA | 3.471 | 3.449 | 0.022 |
| RSK00013 Inadequate or insufficient IT infrastructure to achieve busi | CK | 5.662 | 2.577 | 3.085 |
| RSK00014 Poor employee incentives | DA | 1.727 | 1.727 | 0.000 |
| RSK00015 Increasing external fraud activities | JY | 1.722 | 1.695 | 0.027 |
| RSK00016 Failure to grow staff competencies | CK | 1.750 | 1.671 | 0.079 |
| RSK00017 Misaligned employee goals | JK | 3.872 | 3.580 | 0.292 |
| RSK00018 Failure to sense and eliminate internal fraud | RT | 1.744 | 1.744 | 0.000 |
| RSK00019 Unfit or inappropriate new products launched | DA | 1.716 | 1.566 | 0.150 |
| RSK00020 Poor strategic decision making | DA | 1.702 | 0.797 | 0.905 |
| RSK00021 Inaccessible premises | TB | 1.715 | 1.696 | 0.019 |
| | | 117.987 | 103.967 | 14.020 |



Potential control benefits Figure 8.8

Results for All Controls [Sim1 99.9 50000 seed1(50) - Session: 1 Sample Retail Bank(14) - Quantile: 99.90%]
 Time Frame Factor: 1 - Iterations: 50,000 - Seed: 1
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| Control | Control Owner | Cost of Control GBP(M) | Control Benefit GBP(M) | Control Benefit after Cost GBP(M) | |
|----------|--|------------------------|------------------------|-----------------------------------|--------|
| CTR00002 | Salary surveys | JK | 0.200 | 5.118 | 4.918 |
| CTR00003 | Training and mentoring schemes | CH | 0.400 | 5.483 | 5.083 |
| CTR00004 | Retention packages for key staff | DA | 2.000 | 6.561 | 4.561 |
| CTR00005 | Staff training | DA | 0.100 | 2.775 | 2.675 |
| CTR00006 | Learning gained from previous deals | TB | 0.200 | 2.775 | 2.575 |
| CTR00007 | Review of individual needs in performance appraisal process | DA | 0.300 | 2.319 | 2.019 |
| CTR00008 | Procedure manuals for processes | AN | 1.000 | 2.775 | 1.775 |
| CTR00009 | Defined communication channels | RT | 0.200 | 6.518 | 6.318 |
| CTR00010 | Documented procedures and processes | NS | 0.150 | 0.000 | -0.150 |
| CTR00011 | FSA registration | DA | 2.500 | 2.970 | 0.470 |
| CTR00012 | Regular updates from various sources | TB | 1.800 | 2.101 | 0.301 |
| CTR00013 | External training courses | JY | 0.750 | 2.275 | 1.525 |
| CTR00014 | AML annual training | JY | 0.800 | 2.993 | 2.193 |
| CTR00015 | Circulation of BBA awareness circulars | DA | 0.150 | 1.497 | 1.347 |
| CTR00016 | KYC | DA | 1.100 | 2.744 | 1.644 |
| CTR00017 | Liquidity risk policy | DA | 1.600 | 3.249 | 1.649 |
| CTR00018 | Increased advertising | CK | 2.100 | 2.489 | 0.389 |
| CTR00019 | Economic forecasting | AN | 1.350 | 1.584 | 0.234 |
| CTR00020 | Staff training | RT | 1.900 | 1.782 | -0.118 |
| CTR00021 | Credit scoring | JY | 2.250 | 3.655 | 1.405 |
| CTR00022 | Forward business planning | JY | 1.800 | 1.782 | -0.018 |
| CTR00023 | Monthly budget against actual review | DA | 0.050 | 3.597 | 3.547 |
| CTR00024 | Corporate governance | JY | 3.100 | 4.696 | 1.596 |
| CTR00025 | Monthly head of compliance & CEO meetings | RT | 1.100 | 2.289 | 1.189 |
| CTR00026 | Competitor monitoring | DA | 1.800 | 1.788 | -0.012 |
| CTR00027 | Staff innovation | JY | 0.900 | 1.820 | 0.920 |
| CTR00028 | SLAs | RT | 0.350 | 1.085 | 0.735 |
| CTR00029 | Outsourcing monitoring | RT | 0.750 | 1.085 | 0.335 |
| CTR00030 | Due diligence | RT | 3.100 | 0.831 | -2.269 |
| CTR00031 | Policy | AN | 1.300 | 0.831 | -0.469 |
| CTR00032 | Record retention | JY | 2.100 | 1.099 | -1.001 |
| CTR00033 | Information security policy procedure and monitoring | AN | 0.000 | 1.177 | 1.177 |
| CTR00034 | Staff training and certification | DA | 4.100 | 0.667 | -3.433 |
| CTR00035 | Client agreements/marketing | DA | 3.700 | 0.487 | -3.213 |
| CTR00036 | Business/strategic planning | DA | 2.100 | 0.000 | -2.100 |
| CTR00037 | IT system performance and capacity monitoring | CK | 0.750 | 2.577 | 1.827 |
| CTR00038 | Salary surveys | AN | 0.100 | 0.515 | 0.415 |
| CTR00039 | Reward linked to performance (fixed salary costs small propo | RT | 2.800 | 0.487 | -2.313 |

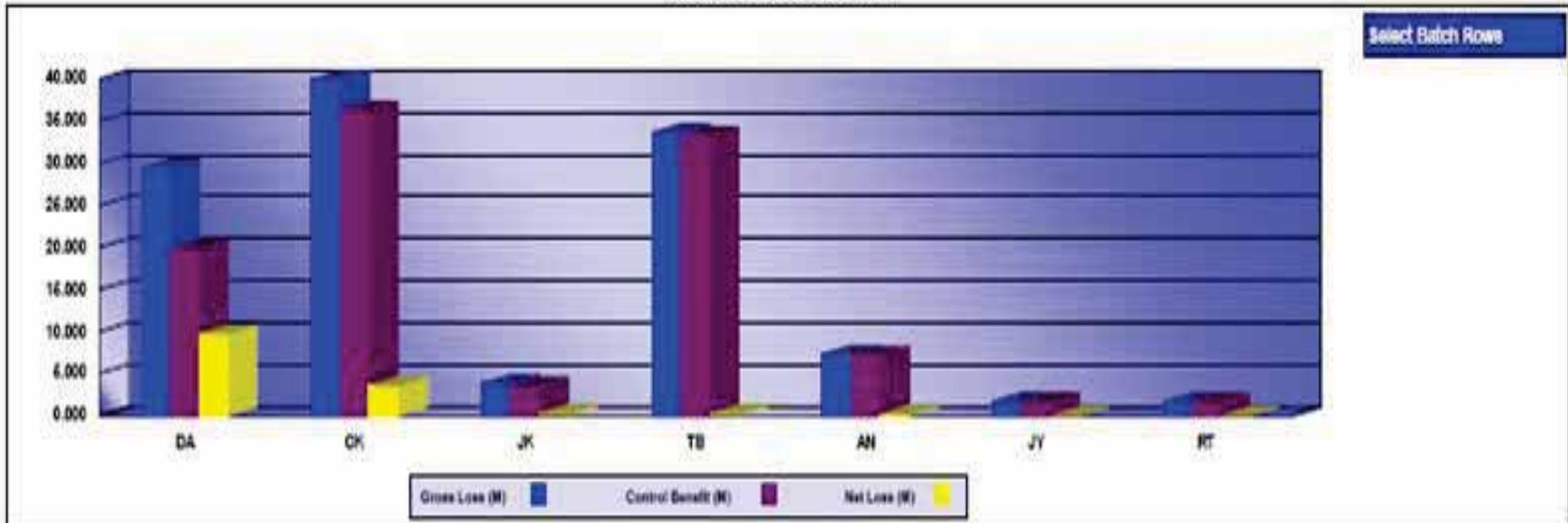


Risk owner results Figure 8.9

Results by Risk Owner [Sim1 99.9 50000 seed1(50) - Session: 1 Sample Retail Bank(14) - Quantile: 99.90%]

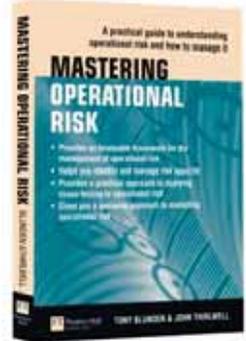
Time Frame Factor: 1 - Iterations: 50,000 - Seed: 1

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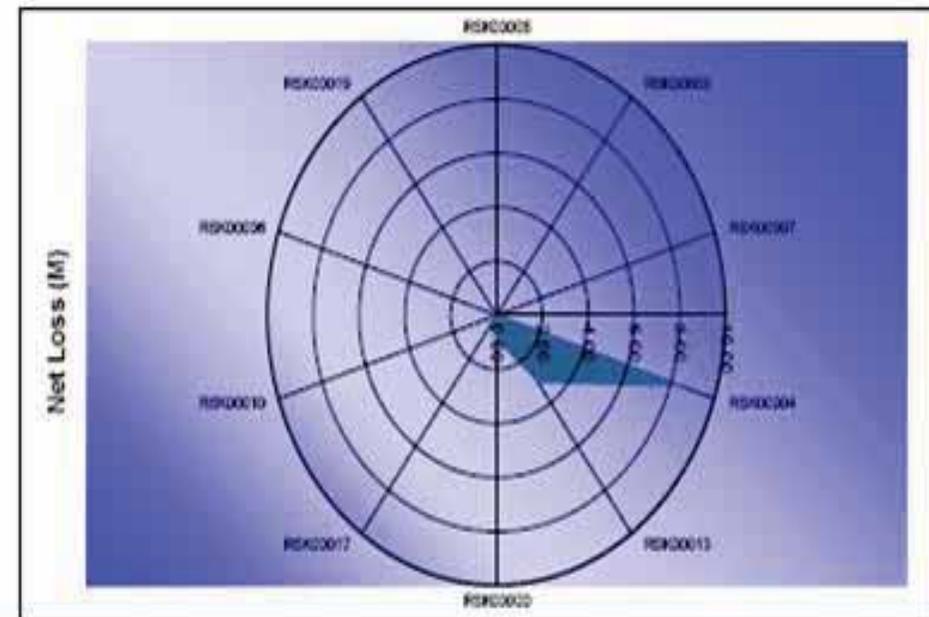
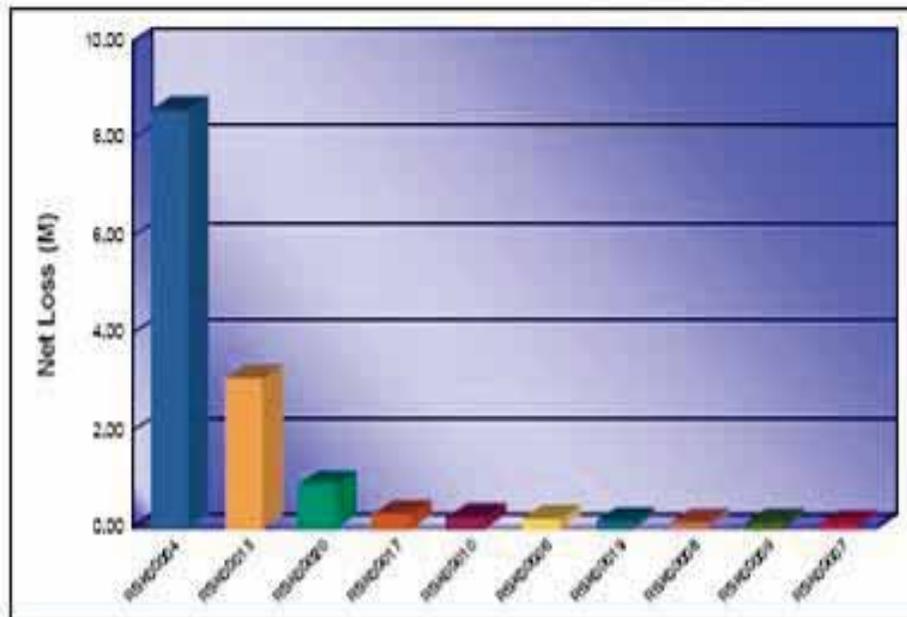


| Risk Owner | Gross Loss GBP (M) | Control Benefit GBP (M) | Net Loss GBP (M) |
|------------|-----------------------|----------------------------|---------------------|
| DA | 29.561 | 19.888 | 9.673 |
| CK | 39.997 | 36.427 | 3.570 |
| JK | 3.872 | 3.580 | 0.292 |
| TB | 33.668 | 33.399 | 0.269 |
| AN | 7.421 | 7.233 | 0.188 |
| JY | 1.722 | 1.695 | 0.027 |
| RT | 1.744 | 1.744 | |
| | 117.985 | 103.966 | 14.019 |

Highest potential residual risks Figure 8.10

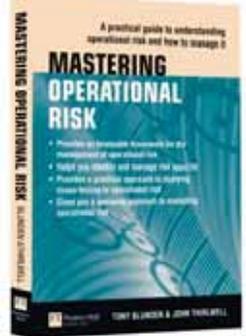


Ten Highest Net (Residual) Risks [Sim1 99.9 50000 seed1(50) - Session: 1 Sample Retail Bank(14) - Quantile: 99.90%]
 Time Frame Factor: 1 - Iterations: 50,000 - Seed: 1
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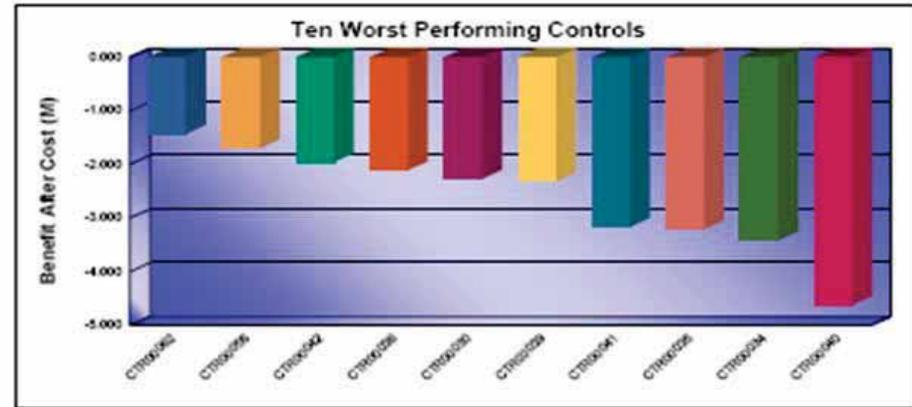
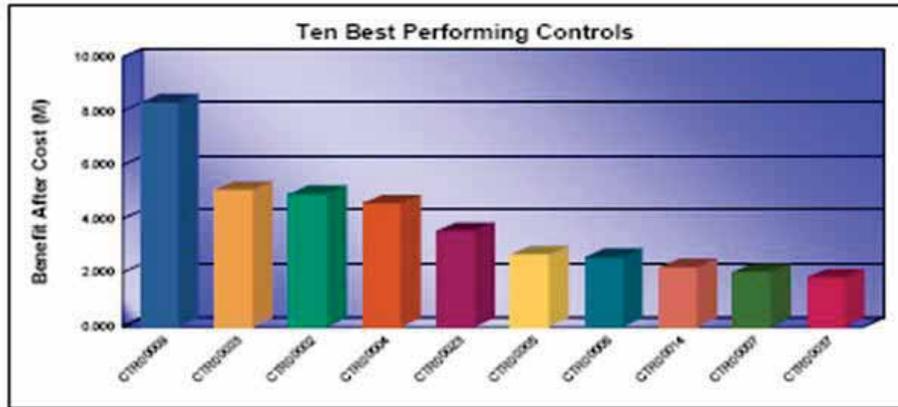


| Risk | Risk Owner | Gross Loss GBP (M) | Control Benefit GBP (M) | Net Loss GBP (M) |
|---|------------|--------------------|-------------------------|------------------|
| RSK00004 | DA | 17.114 | 8.518 | 8.596 |
| RSK00013 | CK | 5.662 | 2.577 | 3.085 |
| RSK00020 | DA | 1.702 | 0.798 | 0.905 |
| RSK00017 | JK | 3.872 | 3.580 | 0.292 |
| RSK00010 | CK | 3.833 | 3.608 | 0.225 |
| RSK00006 | AN | 7.421 | 7.234 | 0.188 |
| RSK00019 | DA | 1.716 | 1.566 | 0.150 |
| RSK00008 | TB | 7.335 | 7.219 | 0.116 |
| RSK00009 | CK | 10.690 | 10.581 | 0.109 |
| RSK00007 | TB | 7.416 | 7.322 | 0.093 |
| End of Ten Highest Net (Residual) Risks | | 66.76 | 53.00 | 13.76 |

Best and worst controls Figure 8.11

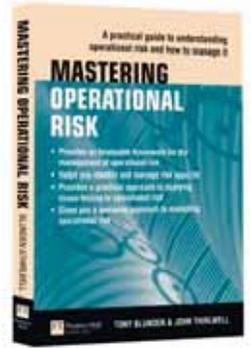


Control Benefit After Cost [Sim1 99.9 50000 seed1(50) - Session: 1 Sample Retail Bank(14) - Quantile: 99.90%]
 Time Frame Factor: 1 - Iterations: 50,000 - Seed: 1
 Created on 08/01/2008 12:57:15



| Control | Control Owner | Cost of Control GBP (M) | Control Benefit GBP (M) | Control Benefit after Cost GBP (M) | |
|----------------------------------|--|-------------------------|-------------------------|------------------------------------|--------|
| Best Performing Controls | | | | | |
| CTR00009 | Defined communication channels | RT | 0.200 | 8.518 | 8.318 |
| CTR00003 | Training and mentoring schemes | CH | 0.400 | 5.483 | 5.083 |
| CTR00002 | Salary surveys | JK | 0.200 | 5.118 | 4.918 |
| CTR00004 | Retention packages for key staff | DA | 2.000 | 6.561 | 4.561 |
| CTR00023 | Monthly budget against actual review | DA | 0.050 | 3.597 | 3.547 |
| CTR00005 | Staff training | DA | 0.100 | 2.775 | 2.675 |
| CTR00006 | Learning gained from previous deals | TB | 0.200 | 2.775 | 2.575 |
| CTR00014 | AML annual training | JY | 0.800 | 2.993 | 2.193 |
| CTR00007 | Review of Individual needs in performance appraisal process | DA | 0.300 | 2.319 | 2.019 |
| CTR00037 | IT system performance and capacity monitoring | CK | 0.750 | 2.577 | 1.827 |
| Worst performing Controls | | | | | |
| CTR00062 | Building and firm guards | RT | 2.100 | 0.670 | 1.430- |
| CTR00056 | Monitoring of market data | AN | 1.700 | 0.000 | 1.700- |
| CTR00042 | Physical security | CK | 2.800 | 0.848 | 1.952- |
| CTR00036 | Business/strategic planning | DA | 2.100 | 0.000 | 2.100- |
| CTR00030 | Due diligence | RT | 3.100 | 0.831 | 2.269- |
| CTR00039 | Reward linked to performance (fixed salary costs small propo | RT | 2.800 | 0.487 | 2.313- |
| CTR00041 | Benefits programme | CK | 3.400 | 0.237 | 3.163- |
| CTR00035 | Client agreements/marketing | DA | 3.700 | 0.487 | 3.213- |
| CTR00034 | Staff training and certification | DA | 4.100 | 0.687 | 3.413- |
| CTR00040 | Incentive plan | DA | 5.100 | 0.487 | 4.613- |

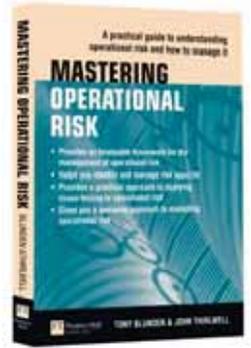
Output Challenges

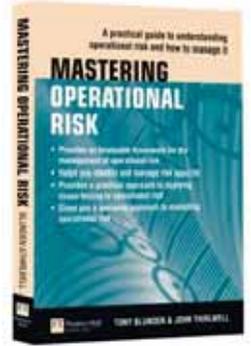


- ▶ Highest residual risks: do we need better controls or is this level irreducible?
- ▶ Lowest residual risks: are these realistic or is reality different?
- ▶ Best performing controls: do we need them to be this good or can we allocate resources somewhere else for more effective overall control?
- ▶ Worst performing controls: are these the ones we want to be the worst?
- ▶ Risk owners: are these the ones for whom the firm has the biggest appetite?

Business Benefits

- ▶ Utilises already available RCA data
- ▶ Focuses the business on:
 - Risk and control challenge
 - Top residual risks
 - Risk owners
 - Worst performing controls
 - Best performing controls
- ▶ Clarifies order for control improvements
- ▶ Directs business managers to monetary gains for enhancing risk and control environment
- ▶ Enables firms to investigate the sensitivity of their risk and control profile to change; change that cannot be calculated or seen intuitively with a spreadsheet





Support scenario analysis

Stress test risks and/or controls to see the impact of changes such as:

- ▶ All risks in a certain area (eg. payments) increasing in severity by 10%, combined with a reduction in control effectiveness by 15% for all controls relating to reconciliations
- ▶ Assess the impact of a new business that gives rise to new or different risks
- ▶ Assess the P/L benefit of introducing a new control
 - e.g. perhaps a new control is scheduled to be introduced next FY due to budget constraints. Modelling enables users to investigate the benefit of it being introduced earlier

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