The Implementation of an Operational Risk Management Framework

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- Qualitative Assessment
- Quantitative Assessment
- Organizational Aspects of Operational Risk Management
- Lessons Learned
### Need for Operational Risk Management

#### Internal Factors:
- Lack of transparency for the management
- Lack of awareness, definitions and culture
- Dependence on technology
- Increased product complexity
- Increased transaction volume
- Shortage of qualified staff and staff turnover

#### External Factors:
- Spectacular operational loss cases: Barings, etc.
- Protection of reputation
- Legal: KonTraG

### Changing Environment
- Globalization /functional structure
- Competitive Environment & cost allocation
- Regulation (e.g. BIS)
- Business diversity
  - increasing product complexity
  - restructuring to address market need

### New Industry Practices

#### Best Practice:
- Consistent framework
- Organizational structure in place
- Ongoing risk assessments
- Link to capital allocation
- Integrated risk management (market, credit, operational risk)
- OR awareness part of corporate risk culture

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**Current situation for many banks:**
- Fragmented approach (responsibilities, ...)
- No (consistent) methodology
- No integration with market and credit risks
## Benefits of Operational Risk Management

<table>
<thead>
<tr>
<th>Internal Benefits</th>
<th>External Benefits</th>
<th>Commercial Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Culture</strong></td>
<td>• Adherence to regulatory and legal requirements</td>
<td>Efficient allocation of capital</td>
</tr>
<tr>
<td>• Better understanding of OR losses</td>
<td>• Protection of Reputation</td>
<td></td>
</tr>
<tr>
<td>• Increased risk awareness</td>
<td>• Positive influence on rating</td>
<td></td>
</tr>
<tr>
<td><strong>Management</strong></td>
<td>• Ability to manage OR losses within an expected range</td>
<td>Integrated Risk Management</td>
</tr>
<tr>
<td>• Ability to manage OR losses within an expected range</td>
<td>• Best practice implementation</td>
<td></td>
</tr>
<tr>
<td>• Risk prioritization</td>
<td>• Service Quality Improvement</td>
<td></td>
</tr>
<tr>
<td>• Cost effectiveness of control</td>
<td>• Preservation of Capital</td>
<td></td>
</tr>
<tr>
<td>• Continuous improvement vs. ad hoc / reactive improvement</td>
<td></td>
<td>Quality of OR Management Process</td>
</tr>
<tr>
<td><strong>Control</strong></td>
<td>• Transparency of controls</td>
<td></td>
</tr>
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<td>• Framework for management process</td>
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### Internal Benefits
- Culture
  - Better understanding of OR losses
  - Increased risk awareness
- Management
  - Ability to manage OR losses within an expected range
  - Risk prioritization
  - Cost effectiveness of control
  - Continuous improvement vs. ad hoc / reactive improvement
- Control
  - Transparency of controls
  - Framework for management process

### External Benefits
- Adherence to regulatory and legal requirements
- Protection of Reputation
- Positive influence on rating
- Best practice implementation
- Service Quality Improvement
- Preservation of Capital

### Commercial Benefits
- Efficient allocation of capital
  - Integrated Risk Management
  - Quality of OR Management Process

### Value vs. Sophistication
Classification of Methodical Sophistication for the Assessment of Operational Risk

- Regular and extensive
- Aggregation of risk
- Capital Allocation
- Risk models
- Ex-ante evaluation
- Regular and extensive
- pro-active
- Scoring models
- Early warning systems
- Ex-post evaluation
- selective controls
- mostly reactive
- Internal control system

Avoiding large (capital) losses
Maximizing shareholder value

Leading edge/tomorrows best practice
Todays best practice
Common practice

Integrated Risk Management
Other Risks
Operational Risk
Market Risk
Credit Risk
Definition of Operational Risk

Operational risk can be found in all parts of the organization and is difficult to define ...

- **PEOPLE**
  - workload
  - capabilities
  - carelessness
  - fluctuation
  - ...

- **SYSTEMS**
  - downtime
  - security
  - ...

- **PRODUCTS**
  - volume
  - complexity
  - ...

- **PROCESSES**
  - controls
  - transparency
  - documentation
  - ...

PwC
A thorough analysis of the underlying causes of operational risks is key to their differentiation and categorization. We categorise by underlying cause of loss for both technical and business reasons ...

### Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unauthorised activities:</td>
<td>Losses from unauthorised trading, overstepping authority or unauthorised approvals</td>
</tr>
<tr>
<td>Criminal:</td>
<td>Losses from criminal / fraudulent activities (e.g. insider trading, theft)</td>
</tr>
<tr>
<td>External environment:</td>
<td>Losses due to changes in political, legislative or regulatory factors</td>
</tr>
<tr>
<td>Management process:</td>
<td>Losses due to failure in management processes (negligence or judgement errors specific to the management of operational risk)</td>
</tr>
<tr>
<td>Human resources:</td>
<td>Losses from poor judgement with respect to compensation &amp; benefits, wrongful termination and discrimination</td>
</tr>
<tr>
<td>Transaction processing:</td>
<td>Losses from processing failure, poor documentation and erroneous data entry</td>
</tr>
<tr>
<td>Technology:</td>
<td>Losses due to failure or inadequacy of internal hardware / software</td>
</tr>
<tr>
<td>Disasters:</td>
<td>Losses due to natural catastrophes (e.g. floods, earthquakes) and accidental catastrophes (e.g. fires)</td>
</tr>
<tr>
<td>Sales practices:</td>
<td>Losses due to inappropriate dealings with customers (e.g. deceptive sales practices, overcharging)</td>
</tr>
</tbody>
</table>

There is currently no generally accepted definition of operational risk
Tools Supporting Operational Risk Management (1/2)

**Tools**

**Risk Maps/ Process Flows**
- Deal Capture
- Confirmation
- Settlement

**Qualitative Risk Assessment**

<table>
<thead>
<tr>
<th>Benchmark, Internal Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deal capture activity</td>
</tr>
<tr>
<td>Weighted Score %</td>
</tr>
<tr>
<td>People</td>
</tr>
<tr>
<td>Processes</td>
</tr>
<tr>
<td>Systems</td>
</tr>
</tbody>
</table>

**Risk Indicators**

Process: Settlement

<table>
<thead>
<tr>
<th>Settlement Failures</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>#</td>
<td></td>
</tr>
</tbody>
</table>

**Deliverables**

- High level mapping of core internal processes
- Ratings of risks and controls
- Identification of hot spots and process bottlenecks
- ... 

- Self-assessment score
- Management report summary
- Risk mitigation plan
- Work plan for corrective action
- Assignment of responsibilities
- ... 

- Statistics drive the communication and management process
- Monthly report with key indicators and trends
- Daily indicators
- Various stand alone reports
- ...
Tools Supporting Operational Risk Management (2/2)

**Tools**

**Escalation Triggers**
Quantitative or qualitative goals or limits for risk indicators that are used as a basis to communicate potential problems to a higher level management

<table>
<thead>
<tr>
<th>Rating</th>
<th>Escalation Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Loss Event Database**

- Loss Event
- Losses

**Quantitative Risk Assessment**

**Deliverables**

- Balanced scorecard for operational risk
- Enhancement of risk indicators
- Ticket/volume caps
- Error/exception rate caps
- Systems downtime caps
- ...

- Confidential database maintained by OR in conjunction with internal audit
- Historical loss profile (i.e. for quantification)
- External market data
- Loss cause analysis
- ...

- VaR for business lines and risk categories
- Capital/ cost allocation
- Cost/benefit analysis
- ...

PwC
Integrated Management of Operational Risks

Risk Management Business Units

Operational Risk Management Unit

Loss event database

Scenarios

Risk indicators

Qualitative Assessment

Quantitative Assessment

Quality

Operational Risk Framework

Frequency and severity distribution

Cause analysis

Rating

Rating

Rating

Quality
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Qualitative Assessment: Process Oriented Approach to Operational Risk

Step 1: Prioritization

Goals:
- Clear understanding of operational risk
- Building awareness
- Identification of critical, risk bearing business processes

Probability

Highest Priority

Size of loss

Step 2: Detailed Qualitative Assessment

Business Process

Control Points

Goals:
- Detailed definitions and framework for operational risk
- Building risk culture
- Implementing an early warning system with adequate control points
- Assessment of risks
SALVaRE as a Methodology for the Qualitative Assessment of Operational Risk

**SALVaRE**

- **Procedure categories**: Generic control units, System development control units, Product/business process specific control units, Computer operations control units

  - **Control units**: C007: Screen Design, C008: Batch Conversion, ...
    - **Detailed control points**: Control points:
      - Control points:
        - ...

  - **Internal control structure**

- **Approx. 100 control units cover all important aspects of banking**

- **Approx. 3000 detailed control points**

SALVaRE includes a large database of best practice control points.
### SALVaRE: Self Assessment at Control Points

<table>
<thead>
<tr>
<th>Control Points</th>
<th>Weight</th>
<th>Max. Rating</th>
<th>Max. Score</th>
<th>Actual Rating</th>
<th>Actual Score</th>
<th>Scale</th>
<th>comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is this a new kind of project?</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>3</td>
<td>12</td>
<td>75%</td>
<td><img src="https://example.com/smiley.png" alt="Smiley" /></td>
</tr>
<tr>
<td>2. Are the project goals consistent and well documented?</td>
<td>3</td>
<td>4</td>
<td>12</td>
<td>2</td>
<td>6</td>
<td>50%</td>
<td><img src="https://example.com/neutral.png" alt="Neutral" /></td>
</tr>
<tr>
<td>3. Has the budget for the project been allocated?</td>
<td>4</td>
<td>4</td>
<td>16</td>
<td>0</td>
<td>0</td>
<td>0%</td>
<td><img src="https://example.com/sad.png" alt="Sad" /></td>
</tr>
</tbody>
</table>
Integration into the Business Environment

Process with 4 control points

Start → A → B → END

Aggregate

Scoring of control points

Immediate action required!

Deterioration of the scoring at control points 2,3,4
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Benefits of the Quantification of Operational Risk

Creates Management Awareness:
- Necessitates development of a rigorous operational risk management framework
- Highlights cost of operational failure (expected losses)
- Identifies largest exposures (unexpected losses)
- Provides framework for cost-benefit analysis

Links controls to performance measurement
- Quantifies operational risk capital
- Provides incentives for risk mitigation initiatives

Rationalizes Insurance Programs
- Quantifies cost/benefit of alternate types of coverage
Categorisation by underlying cause

<table>
<thead>
<tr>
<th>Cause</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unauthorized Activities</td>
<td>Replacement Cost</td>
</tr>
<tr>
<td>Criminal</td>
<td>Legal</td>
</tr>
<tr>
<td>Transaction Processing</td>
<td>Regulatory</td>
</tr>
<tr>
<td>Management Process</td>
<td>Business</td>
</tr>
<tr>
<td>Human Resources</td>
<td>Reputation</td>
</tr>
<tr>
<td>Sales Practices</td>
<td>Business Interruption</td>
</tr>
<tr>
<td>Technology</td>
<td></td>
</tr>
<tr>
<td>External Environment</td>
<td></td>
</tr>
<tr>
<td>Disasters</td>
<td></td>
</tr>
</tbody>
</table>

Direct Loss

Total Loss

Forgone Income

Direct Loss

Total Loss

Forgone Income
Operational Value at Risk (VaR) is the difference between the annual aggregate loss at a selected confidence level and the expected annual loss.

Operational Value at Risk (VaR) is primarily driven by low frequency, high severity risks. Thus, some businesses which experience high annual losses may have a relatively low VaR.
OpVaR is a statistical/actuarial approach which is based on the theory that historical data can be used to measure the full range of potential exposures each business faces.

\[
\text{OpVaR} = f(\text{Exposure, Relevance, Quality, Transfers})
\]
Collection of loss data will provide significant commercial benefits, since it leads directly to the quantification of operational risk and the development of management processes.

**Risk Management**
- Root cause analysis of issues
- Management reports highlighting trends / issues
- Resources focused for maximum benefit

**Quantification**
- Operational risk capital quantification
- Used to calibrate results (expected loss)
- Results adapt to changes in the firm
- Leads to risk adjusted performance measurement

**Culture**
- Increased awareness of the costs of operational risk
Loss data is used to calculate the risk profile of each business, i.e., the inherent exposure of each business to each risk category. The end result is a customization set of frequency and severity distributions for each business unit, for each risk category.
OpVaR’s bottom-up approach results in a VaR figure for each business line and risk category on a diversified and undiversified basis.

<table>
<thead>
<tr>
<th>Unauthorized Activities</th>
<th>Sales Practices</th>
<th>Criminal</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail Banking</td>
<td>56</td>
<td>73</td>
<td>40</td>
</tr>
<tr>
<td>Commercial Banking</td>
<td>74</td>
<td>87</td>
<td>65</td>
</tr>
<tr>
<td>Trading</td>
<td>468</td>
<td>123</td>
<td>11</td>
</tr>
<tr>
<td>Asset Management</td>
<td>235</td>
<td>89</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sum</td>
<td>944</td>
<td>224</td>
<td>145</td>
</tr>
<tr>
<td>Total</td>
<td>567</td>
<td>156</td>
<td>89</td>
</tr>
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</table>
The scale value from a qualitative assessment directly drives the quality parameter of the OpVaR model and hereby links historical data with future scenarios.
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ORMs are appointed by the business/functional unit leader and work closely with the operational risk management unit.
Operational Risk Reporting

1. Data, Information (Self assessment, loss incidents)

2. Unit specific operational risk report

3. Aggregate operational risk report

Reports to relevant units in case of particular loss incident

- Board
- Internal Audit
- Business/ Functional units
  - A
  - B
  - C
  - ORM
  - ORM
  - BRM

Risk Management Department

Operational Risk Management unit
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Value Added
• Quality Management
• Improved system performance & contingency, organizational structure and processes
• Improved ratios (risk/return, cost/return)

Group Wide
• All legal entities - subsidiaries and branches / business divisions and support functions

Structured Framework
- Strategy
- Risk Policies
- Risk Mgmt. Processes
- Controls
- Assessment
- Measurement
- Reporting
- Risk Mitigation
- Operations Management
- Company Culture

Centrally coordinated
• Central program management
• Top management commitment
• Clear project structure
• Leveraging of know how
Operational Risk Management should incorporate top down and bottom up approaches

**Top Down:**
- Group operational risk committee (and sub-committees)
- Provision of Central Framework
- Specialized Operational Risk Unit
- Coordination of activities, procedures and methodologies
- Risk Profiling & Capital Allocation
- Benchmarking

**Bottom Up:**
- Identify and collect relevant data
- Local operational risk committees
- Generate and share best practice
- Business specific policies
- Process methods
- Self assessments
Some Key Factors of Success

• Show a value proposition to the business/functional units
• Buy in the management of the business/functional units
• Take your time to build awareness for operational risk
• Don’t overwhelm business with cumbersome and rigid control systems
• Start collecting loss data early on