

Operational risk management: Using loss-data more effectively

Robert Huebner

Received (in revised form): 22nd October, 2010

Operational Risk Management, Deutsche Bank, Theodor-Heuss-Allee 70, Frankfurt am Main, Germany;

Tel: +49 69-910-37685; E-mail: robert.huebner@db.com



Robert Huebner is Deutsche Bank's Deputy Head of Operational Risk Management and a Board Member of Operational Risk eXchange (ORX), the operational loss-data consortium, for which he chairs the Quality Assurance Working Group. At Deutsche Bank, Robert is currently in charge of managing the Bank's overall operational risk profile and also supervising the operational risk profiles of the business and infrastructure divisions. In 2006 he became Head of the Regional Operational Risk Management Team in London, in charge of establishing the day-to-day operational risk management across Deutsche Bank's Corporate Investment Bank. In 2003, Robert was Operational Risk Officer for the Corporate Finance division. He joined Deutsche Bank in 1998, initially in charge of the Global New Product Approval framework. Since 1999 he has helped develop the Bank's operational risk governance and framework. Robert also helped implement the advanced measurement approach across the organisation, which was approved in 2007 by the BAFin, the German Banking supervisor, for regulatory capital purposes. He is a trained lawyer and often lectures on the subject of operational risk management at the Frankfurt School of Finance and Goethe Business School.

ABSTRACT

Using operational risk loss-data is paying off. It can now be demonstrated that the operational risk in processing transactions is containable.

Continuous infrastructure improvements (such as via lessons learned, concentration analysis or Six-Sigma projects) and diligent preparation of changes (especially outsourcings and new products) are the instruments of choice to do so.

The common causes of operational risks continue to be mishaps in the client interface or trader fraud. Operational risk remains rather low correlated with credit and market risk, and thus hardly increased during the financial crisis. This is despite the fact that operational risk within credit and market risk contributed to some of the biggest losses the industry has experienced over recent years.

Based on the loss-data gathered over the last 10–15 years, the operational risk discipline has matured sufficiently to inform strategic and investment decision-taking, in the same way as credit or market risk has done for many years. The operational risk inherent in investments (such as acquisitions or new products) can now be priced, as well as divestments (such as outsourcings or reduced controls), and can provide a business case of prevented operational risk losses to justify IT developments or increased resources for new controls. This requires sophisticated capital modelling, plenty of correlation and root-cause research, and dedicated development of predictive and sensitive key risk indicators.

Using loss-data creates transparency and validates many pre-perceptions around operational risk. At the same time, it drives the continuous improvement of the loss-data capturing process with regards to completeness and correctness.

Clear governance, systematic data reconciliation and quality assurance are key elements to establishing the foundations for operational risk managers to earn their seat at the decision-making table in a modern financial organisation.

Keywords: *operational risk management, losses, ORX, operational risk loss capture, ORM*

USING OPERATIONAL RISK LOSS PAYS OFF FOR DECISION-MAKING

Using operational risk losses to inform business decisions, and to keep exposures within a defined risk appetite, are the latest developments observable in the still maturing operational risk discipline. Business cases are driven by the predicted profit, of which one element is increased or avoided capital cost. Therefore operational risk losses are being used by the most sophisticated banks to feed both the cost and the capital cost variables.

The cost variable is being addressed on two angles: first, estimating operational risk losses hitting the profit and loss balance sheet (P&L) as well as operational risk losses avoided by the altered run-the-bank environment (and similarly for any operational risk the organisation is exposed to during the implementation period of decisions, such as during the project phase). In both positions maximum potential loss analysis is applied.

The second angle is pricing the capital cost implications via simulation of the different potential maximum potential loss events in the internal model. Meaningful results require impact beyond the usual statistical noise level inherent to any very complex capital model.

At first glance, maximum potential loss analysis sounds similar to what is already being conducted under the label risk assessment or scenario analysis. These are

expert-based assessments of potential loss severity and frequencies of specified operational risk. The difference is running this exercise on losses experienced either internally or by another bank (so called ‘external losses’) and thus transforming debates around subjective pre-perception, or ‘gaming’, into more focused dialogue. Using losses creates the evidence needed to support sound business cases.

Once the decision has been taken, this information feeds into the operational risk expected loss budgets for planning and budgeting, and thus also capital calculation purposes. At the same time the identified root cause for operational risk losses are considered and mitigated in the project management for implementing the respective decision.

Typical business decisions that incorporate consideration of operational risk include:

- New Products/Markets
- Acquisitions/Divestments/Joint Ventures
- Outsourcings/Sourcings/Insourcings
- Change/Transformation/Cost Cutting Programs
- IT Investment Governance

New regulatory capital requirements and a priority for lean balance sheet management are now driving capital implications as a top management priority.

OPERATIONAL RISK CONCENTRATION ANALYSIS MAKES A DIFFERENCE — PART 1

Operational risk concentration analysis using internal loss-data does not provide the full picture. The higher frequency of operations-related losses has always held up the perception that operational risk is almost identical to operations risk. But these rather small losses are what are called

Table 1: Overall summary of ORX annual data (2002–2009)

	<i>Total</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>2007</i>	<i>2008</i>	<i>2009 H1</i>
Total number of loss events	142,041	8,519	11,338	14,920	18,106	21,620	23,620	31,511	12,910
Total gross loss (€Mn)	46,761	5,726	7,448	5,314	5,152	4,711	6,404	7,584	4,383
Average loss per event (€)	329,208	672,145	656,906	356,16	284,547	217,900	277,026	240,678	339,504
Number of ORX members		12	12	17	22	34	41	52	52

Source: ORX Operational Risk Report Dec. 2009 – page 3 – www.orx.org

‘expected losses’ and, to a high degree, are effectively the costs of doing business. The real threat is coming from other components of the rather heterogeneous world of operational risk.

Excursion: Industry operational risk profile

When looking into the industry loss experience as gathered by Operational Risk eXchange (www.ORX.org) nearly 180,000 operational risk loss events have been collected since 2002, with a total value of €62bn. It is clearly observable that operational risk remains rather low correlated with credit and market risk, and thus hardly increased during the financial crisis. The average size of losses has hardly changed at all since 2005, and only increased slightly during 2009, in contrast to the dotcom crisis, which is clearly observable in the average loss size during 2002 and 2003. The increases (shown in Table 1) for 2007 and 2008 are down to the increased membership of ORX. Instead, it was rather operational risk within credit and market risk that contributed to some of the biggest losses the financial services industry experienced over recent years. The main causes of operational risk losses are outlined in Tables 2 to 4.

Despite the rather high volumes observed in retail banking external fraud, clients and execution, and sales and trading execution, these losses are containable due

to the small average size. It is the high number of them making them preferred targets for continuous infrastructure improvement (such as via lessons learnt, concentration analysis or Six-Sigma projects) as well as diligent preparation of changes (especially outsourcings and new products).

The most recent ORX loss report is available under ORX.org, with full 2009 developments, but stops at 2003 with no further date before then. The amount of operational risk losses incurred by the industry year after year, allied with data that brings transparency to these losses, has made operational risk managers key sources for cost-cutting ideas.

OPERATIONAL RISK CONCENTRATION ANALYSIS MAKES A DIFFERENCE – PART 2

Systematic analysis of the top operational risks has been identified as a valuable tool to shape priorities for investments in infrastructure. The processing of risk-loss events lends itself especially to concentration analysis, because such events are rather frequent. In fragile, highly manual processing environments such analysis clearly identifies processing errors as the key root causes and helps to identify very targeted and effective mitigating measures. In outsourced or highly straight-through processing environments such loss events almost disappear, or reduce to a level

Table 2: Distribution of gross amount by business line and event type (2002–2008)

(€Mn)	Internal fraud	External fraud	Employment practices & workplace safety	Clients' products & businesses' practices	Distasters & public safety	Technology & infrastructure failures	Execution delivery & process management	Malicious damage	Total	% of total
Corporate finance	17	171	58	6,737	0	6	518	0	7,507	17.71%
Trading and sales	1,462	353	161	1,773	5	109	3,836	0	7,701	18.17%
Retail banking	780	3,092	849	3,097	125	190	3,008	8	11,149	26.31%
Commercial banking	386	1,098	56	1,736	4	42	1,821	0	5,143	12.14%
Clearing	11	49	8	116	1	22	251	0	459	1.08%
Agency services	8	607	18	223	3	9	469	0	1,337	3.16%
Asset management	196	18	75	594	1	8	495	0	1,387	3.27%
Retail brokerage	161	48	152	690	1	7	195	0	1,255	2.96%
Private banking	140	79	38	671	3	6	325	0	1,262	2.98%
Corporate items	50	112	257	937	370	0	421	2	2,167	5.11%
Multiple lines	42	32	38	2,679	10	47	163	0	3,013	7.11%
Total	3,253	5,659	1,711	19,254	522	454	11,505	11	42,379	
% of total	7.68%	13.35%	4.0%	45.43%	1.07%	27.15%	0.03%			

■ 1%–<5% □ 5%–10% ■ >10%

Source: ORX Operational Risk Report Dec. 2009 – page 3 – www.orx.org

where any further spend would not be reasonable. Here the focus will change to using the rare loss events to develop predictive metrics indicating capacity vendor viability constraints, with sufficient lead time to prevent cliff effects from happening.

But identified top operational risks do not necessarily need to be reduced. Given the hard data such losses provide, all the ingredients are at hand to optimise the insurance coverage for cost-effectiveness.

The premium should reflect both the P&L impact and the capital costs prevented, in contrast to self-insurance or even industry self-insurance. That said, sometimes fixing is more cost-effective.

Regardless, using loss-data increases the capability to make business decisions. Mitigation actions to reduce losses within a certain division or support function need to prove their effectiveness over a time period to show the reduced loss. Operational loss-data can be a clear indi-

Table 3: Distribution of frequency by business line and event type (2002–2008)

	Internal fraud	External fraud	Employment practices & workplace safety	Clients' products & businesses' practices	Disasters & public safety	Technology & infrastructure failures	Execution delivery & process management	Malicious damage	Total	% of total
Corporate finance	19	184	153	292	2	10	395	0	1,005	0.82%
Trading and sales	111	788	495	674	26	705	11,510	0	14,309	11.08%
Retail banking	4,042	40,603	7,283	7,525	867	1,120	17,646	111	79,197	61.32%
Commercial banking	178	3,861	331	1,818	55	237	4,291	2	10,773	8.34%
Clearing	42	611	89	112	4	151	1,684	0	2,693	2.09%
Agency services	16	60	98	169	11	60	2,901	0	3,315	2.57%
Asset management	55	103	141	519	9	80	2,273	0	3,180	2.46%
Retail brokerage	223	371	688	2,378	12	63	1,577	0	5,312	4.11%
Private banking	141	387	145	1,450	28	67	2,602	1	4,821	3.73%
Corporate items	57	273	1,716	372	251	78	992	10	3,749	2.90%
Multiple lines	27	157	28	110	17	44	341	3	727	0.56%
Total	4,911	47,398	11,167	15,419	1,282	2,615	46,212	127	129,131	
% of total	3.80%	36.71%	8.65%	11.94%	0.99%	2.03%	35.79%	0.10%		

■ 1%–<5% □ 5%–10% ■ >10%

Source: ORX Operational Risk Report Dec. 2009 – page 9 – www.orx.org

cator of how successful business case assumptions may have been.

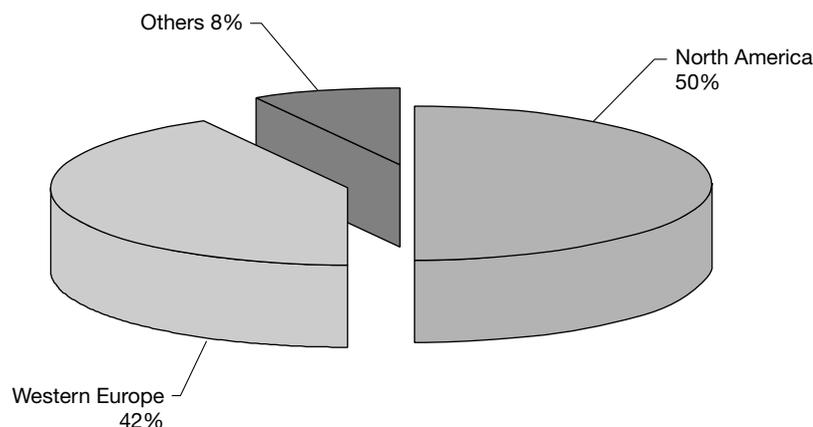
Monitoring the investment-specific operational risk-loss reduction predictions strengthens accountability and helps transition an organisation from fire-fighting mode to pro-active risk management. That is, it helps keep the operational risk exposure within defined risk appetite limits via driver-specific targets for explicitly accepted operational risks.

Achieving this level of added-value

from operational risk loss-data requires high-quality operational risk loss-data, especially with regards to correctness of categorisations, root causes and failed controls, collected over a number of years.

Operational risk loss-data quality develops after it is being used

Collecting operational risk loss-data can be a complex process. It needs to uncover sometimes hidden truths and also create value for those who need to identify the

Table 4: Distribution of number of loss events by region (2002–2008)

Source: ORX Operation Risk Report Dec. 2009 – page 8 – www.orx.org

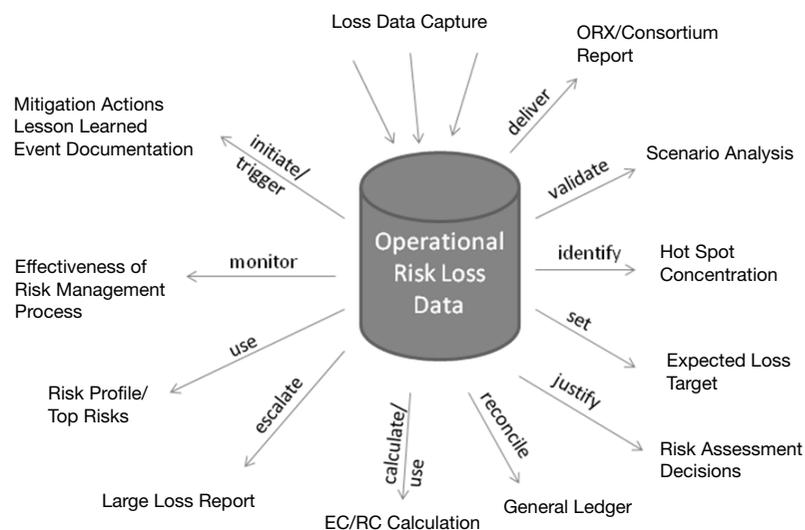
events. Creating value for those who identify the losses means improving their working environment, a goal that has been connected to operational risk management since the mid 1990s. Remaining in the reporting trap, by only counting the losses, is not only underestimating the willingness of an organisation to shape its operational risk profile, but wasting a precious resource.

The most fundamental way to use loss-data is to derive the lessons learned. This requires a lot of diligence and is time consuming, but is the best way to identify the ‘low-hanging fruits’ and maintain a decent ratio between losses and the costs to fix. At the same time it changes the perception connected to filling in data fields in an operational risk loss database. Given mitigating and preventative initiatives are supported by such analysis, doing this automatically forces a very high degree of quality into the capturing process. Lessons learned should be published and presented to the operational risk management committee, enabling other divisions to learn and take actions to prevent losses from the

same root cause. The lesson learned itself should combine detailed escalation information with mitigation actions undertaken to prevent the losses from being incurred again, and a post implementation residual risk assessment that should eventually lead to a transparent and separately documented risk acceptance decision.

Providing early warnings via highly loss-correlated key risk indicators is a natural progression from the fundamental lessons learned approach. It requires a concept of incorporating key risk indicators into the day-to-day operational risk management, as well as into the capital model and systematic validation/back-testing processes. One main benefit of key risk indicators lies in transformation of the role of the infrastructure functions in the organisation from support to specialised operational risk sub-portfolio managers. The indicators are a tool and an incentive to challenge operational-risk-taking decisions. To achieve this, common patterns for lessons learned must be identified, thus guiding the research and development for indicators correlated to sub-portfolios of

Figure 1 Using Operational Risk Loss-data



operational risk losses, with predictive capabilities to warn before incurring increased losses. Given the involvement of the specialised operational risk sub-portfolio managers, the quality of the loss-data of the respective parts of the loss database should be further reviewed and thus improved.

Disaggregating and understanding the nature of operational risk losses is a precondition to forecasting or even planning for them. Planning operational risk losses clarifies the ownership, including for costs, but also forces appropriate risk awareness and mitigation. Clarifying ownership is the final critical measure in achieving high-quality loss-data of the respective parts of the loss database, because it forces further challenges to any business assumptions.

Leveraging the operational risk data to calculate an operational risk capital figure is clearly an obvious reason to start collecting such data. The complexity of operational risk could hinder management actions as a result of the value at risk figures. Depending on the models, the incentive to control and steer is established

by using the operational risk losses more indirectly, ie, via consideration of key risk indicators, expected loss budgets and insurance.

Figure 1 aims to summarise those areas that contribute to improving the quality of the operational risk loss-data capture process within a bank.

How to capture loss-data effectively

Effective data capture requires an understanding of what needs to be captured. Therefore capturing needs to be concentrated to ensure trained people understand the inherent complexity and are guided appropriately. The boundaries to strategic and business risk, credit risk and market risk or timing events are not trivial, especially given that the regulatory definitions for market and credit risk do not look into root causes, while the operational risk definition does. ORX established an industry standard (ORX Reporting Standards available at ORX.org) to help in this regard. The document is supported by the so-called 'case-law-process' where members can raise boundary events to ORX and the Definitions Working Group will

then take a decision and publish that decision to members to maintain consistent capturing across the industry. As an aside, the ORX Reporting Standards are currently under review to update on 'case law' development.

Sourcing the data from the general ledger does not usually provide the required details, such as on specialist operational risk sub-portfolio owners or on the causing and/or bearing units. The concept of differentiating between loss-causing and loss-bearing units establishes an extremely valuable front-to-back view. The unit bearing the losses caused by downstream departments will automatically start driving these costs and risks out of the system. The transparency created by capturing such dimensions often provides the necessary incentives in both areas to establish a fruitful dialog about infrastructure improvements and necessary budgets. Highlighting this two-fold dependency between departments severely improves the joint focus on operational risk-mitigating actions.

Even the reconciliation between a loss database and general ledger requires setting up operational risk sub-accounts to facilitate reasonable results. Data, as far as possible, should be reconciled with the P&L. The link to the P&L should take place monthly or quarterly to assure no events are missed, hidden or wrongly assigned to operational risk. This reconcil-

iation assures loss amounts are correct and events are recorded correctly in the loss-data capture process, which is critical to forming a true picture of operational risk losses within an organisation

CONCLUSION

Despite the fact that operational risk has always been inherent for financial institutions ever since their origin, the history of operational risk as a separate risk management discipline and a topic for cross-divisional learning is a rather young one. In the past, operational risk has been kept within thick walls, resulting in a lack of understanding and constricting the ability to correctly control operational risk as a separate risk category rather than through a combination of multi-reason events. Today operational risk management has become a prudent discipline within the risk management field, to help measure the necessary risk appetite and risk awareness to help drive improvements throughout the firm. In the same way that credit risk and market risk management have been institutionalised throughout the different departments and consolidated to achieve correlation benefits, it is now time for operational risk management to mature. Only then can the value of operational risk loss-data be fully leveraged to inform business decisions and keep exposures within defined risk appetites.

Copyright of Journal of Securities Operations & Custody is the property of Henry Stewart Publications LLP and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.