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March 2009

Summary: When we are thinking about ORM, we often see only a small part of the problem. We all know that many causes lead up to an event, and that many effects can come from one event. To ensure that we examine the full spectrum of causes and trace all preceding circumstances, it must find a way to avoid being fooled into believing that the causes we happen to observe this time are the only ones that matter. This newsletter addresses an old technique of Fault Tree analysis that will help risk professionals in that task.

Dear reader,

The field of Operational Risk Management (ORM) has been around long enough to allow for some new approaches into the toolkit. Concentrating on the topic of Assessments - a key feature of many ORM programmes – ORM has suffered from an overestimation of people's ability to assess risks, impacts and likelihoods. In many programmes, participants (either directly involved business people or those with a specific support role such as IT or Legal) are more or less expected to deliver ready-made risk numbers such as likelihood or impact estimates. The technique of Fault Tree Analysis would be a useful addition to address this shortcoming.

Without a doubt, it is very fruitful to set up methods for ORM *analysis* that look further than internal and external loss data only, relevant though they are. To make the more opinion-based assessment more useful, we could consider Fault Tree Analysis ('FTA') as an addition to the ORM toolkit.

Fault Tree Analysis

FTA was developed to study safety issues, e.g. in aviation, manufacturing and medical research. In its pure form, it is driven by logical relations between events and is therefore often displayed using diagrams based on Boolean logic. This may be too far fetched for ORM now but the basic concept fits well enough.

FTA starts out by focusing on a particular event. As an example, it could be the event of a trader using client funds to play the stock market. This is a possible event, although bank staff will be hard pressed to make an accurate (let alone verifiable) estimate of its likelihood and impact.

The FTA analysis starts by describing a possible event, such as: "Trader X misuses client funds under his management by playing the stock market with the client account. He does numerous trades for this account and siphons off all the profits from the successful ones and leaves the client with all the loss making trades." The next step in the analysis would be to list all circumstances that *directly* lead to such a situation. In ORM speak, we are invited to list all the *first order causes* that would increase the likelihood of this particular event. All Basel II causal categories should be considered here: people, systems, processes, external factors. This should be done in multiple rounds of analysis, involving business people, support staff, external consultants etc to come to a full overview of the causes that directly increase the probability of such an event.



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It will be useful to identify which first order causes must occur in combination with other circumstances for the event to happen, and which causes are by themselves sufficient to increase the probability cause of the event. In our example, lack of a daily report identifying uncommon trading behaviour would be a sufficient contributor by itself. Lack of dual control coupled with direct trader access to client accounts together would also suffice.

The fault tree is further refined by examining which circumstances contribute to the occurrence of these *first order* causes. In our example, lack of dual control could in turn be caused by lax attitudes to risk, or insufficient staffing. Both elements combined would contribute to a increased propensity to have a failure in dual control. The tree starts to take shape, as we list the *second order causes*, i.e. those circumstances that contribute to the first order causes. The point is not to be dogmatic about what is a first order cause or a N-order cause. The point is that by repeatedly asking ourselves what drives the risk, and what drives the circumstances that increase the risk, we come to a fuller understanding of what needs to be controlled in order to manage the risk.

Creating a full list of concrete causes (contributing factors) and their link to the risk, we are painting a more rounded picture of the likelihood of the risk occurring. This picture can be close to comprehensive and identifies all the starting points from which to actually manage the risk.

Relevance of FTA

In contrast with most ORM assessments, FTA does not require the audience to start from a blank sheet of paper. Starting from a blank sheet of paper can be a very useful exercise to allow the audience to wander off in any direction. It is a common practice in certain RSA approaches and has tremendous value to discover hidden risks since it frees up the audience from a pre-conceived and potentially very restricting mind set.

FTA serves a different assessment purpose. It ensures that *all* relevant aspects of a risk can be considered. It is by no means simple to create a comprehensive fault tree. Experience has shown¹ that the creating of a fault tree is a task in itself. When asked to assess the completeness of fault trees, even domain experts have a hard time to identify white spots. But once it is created, even lay people find it an easy to understand and easy to use when confronted with a complete fault tree.

It would be a great boon to the ORM community if effort was spent to take the Basel II Event categorisation to this extra level. A joint industry effort to create fault trees for each event category that could be used across the industry would benefit both the business and the risk management divisions. Business would benefit from a detailed explanation of the circumstances that increase the level of risk for their business. Risk Management would benefit by turning an abstraction (Event classification) into a practical overview of concrete, day to day attention points.

¹ Reference: Fischhoff B., Slovic P. & Lichtenstein S. (1978), "Fault Trees: Sensitivity of Estimated Failure Probabilities to Problem Representation", *Journal of Experimental Psychology: Human Perception and Performance*, 4, 330-344.



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Both would benefit by finally coming to a shared framework that focuses on causes (which are always concrete), instead of risks and abstract events, which are open to interpretation, ill-defined and which defy people's ability to assess them.