

Is it a qualitative or quantitative risk assessment?

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As part of general response to new environmental closure liability regulations published late last year a number of our clients have been looking at, and seriously contemplating implementing standard quantitative risk management processes going forward. These new regulations require, amongst others, all holders of an exploration or mining licence to utilise best practice quantitative risk based means to calculate and to then report the quantum of capital that would be required to deal with a planned or unplanned decommissioning and closure of an exploration, mining, or related set of activities and assets.



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Many practitioners and clients still believe that because a corporate or enterprise risk rating scheme deal with numerical scales, be they financial or other, such a risk rating scheme qualifies as a 'quantitative' risk assessment tool. It is however not quantitative but rather a qualitative tool. Such scales use nominal and descriptive scales for describing the likelihood and consequences of risks. An example of a typical risk severity scale on the potential financial impact of a specific risk issue is depicted below. These scales, that typically qualify the impact of a risk in terms of a scale, financial or other, that can range from major to minor and can contain 3, 5, 7 or more layers or descriptors.

Typical Risk severity scale:

Descriptor	Financial impact	Risk value
Catastrophic	R 500 million	500
Major	R 200 million	200
Moderate	R 20 million	20
Minor	R 5 million	5
Low	R 100 000	1

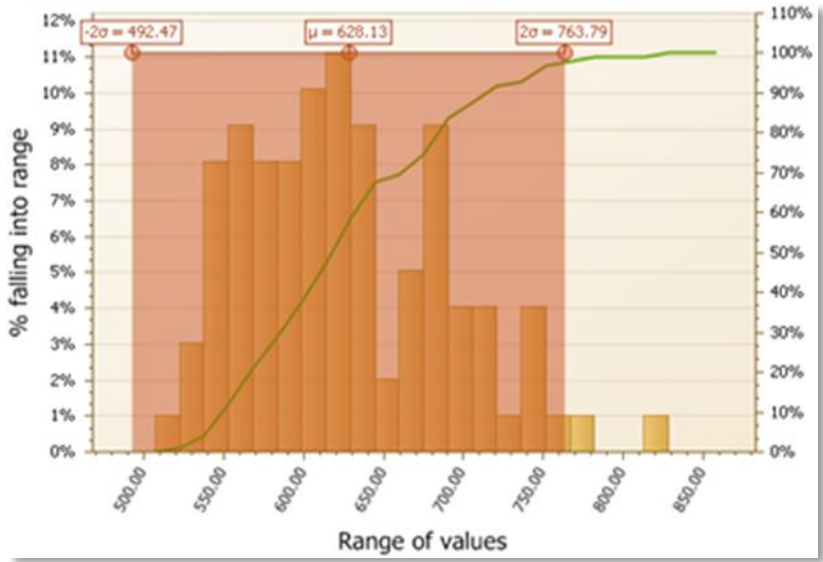
Having this sort of risk rating does not make it a quantitative risk assessment

Such scales estimate a single point, highly subjective estimate of what the impact of a risk may be, typically combined to an equally subjective view of its probability. Although the risk impact may be associated with a ZAR or USD or other value, the value may as well represent an a, b, c, or I II III as it is purely a qualitative scale that enables risk practitioners to easily and quickly determine what is big and what is small.

So what then is meant by a quantitative assessment?

A quantitative assessment of a risk, typically evaluates a range of potential outcomes (in financial or other quantitative term), combined to an equal or larger dataset of possible probabilities. These can be based on historical data, like for example how many times it rained in the past three, five or twenty years, combined to a set of quantitative variables, moderated by factors to determine whether we can expect the future to replicate the past.

For each of those probability events, there is of course an associated outcome, in mm of rain or velocity of run-off or other measurable parameter. Combine this one event with a potential myriad of consequences, for example, did it include hail, lightning and other factors and an equivalent set of probabilities and one can then begin to understand that quantitative risk assessment, is a skill and an art that utilises financial and statistical modelling tools to better understand a complex environment where many risks or future uncertain events co-exist, each with a range of possible outcomes and probabilities but each also with a range of possible interactions with each other. This differs from the qualitative assessment in that the process is extended to a more detailed numerical analysis of uncertainty, usually in the context of a model of the risk events associated with a project or desired set of outcomes being examined. An example of such a process is graphically represented below:



Understanding the difference between the two processes is the first step. The next step is to not rely on basic qualitative linear risk evaluations tools as a quantitative risk assessment. The final step is then to accept that each model is unique, as it should be, to account for a specific set of objectives and uncertainties and to determine what the solution is that that would meet shareholders'/stakeholders' and the regulator's expectations. *

**The author has made use of certain descriptions and definitions in the publication 'Project Management Guidelines(2005)' by Dale Cooper, Stephen Grey, Geoffrey Raymond and Phil Walker and the expert knowledge of the authors is acknowledged.*