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KRI misconceptions and solutions

Summary
Although KRIs are simple in concept, OpRisk has struggled to develop them. We discuss three misconceptions that hinder the development of KRIs. Overcoming these misconceptions, we re-affirm what distinguished a good KRI programme from a meaningless paper exercise: a level headed focus on the relation between indicator and risk plus extensive time series analysis.

Dear reader,
Misconceptions abound regarding Key Risk Indicators (KRIs). Perhaps that is why so many banks struggle with the implementation of a KRI programme. The concept itself is simple enough. It was mentioned in the BIS Sound Practices on the Management & Supervision of Operational Risk (2003, §23): *"banks should identify appropriate indicators that provide early warning of an increased risk of future losses. Such….key risk indicators.... should be forward-looking"*. Interestingly enough, no mention of indicators was made in the Basel II framework (2006), but it emerged in the enhancements of 2009 (§70 on liquidity risk): *"A bank should utilise early warning indicators to identify the emergence of increased risk or vulnerabilities in its liquidity position or funding needs*." That sounds simple enough: so what is keeping banks from developing KRIs?

The characteristics of a good indicator
Risk depends on a multitude of circumstances. It is one of the challenges in (risk) management to manage those circumstances down to a level where the residual risk becomes acceptable. In that sense, all of (risk) management is concerned with indicators. Take as an example the risk of a retail loan default. We would look at indicators such as the borrower's annual salary, the employment status, the age, the total amount of other loans and his/her history of defaults to assess the risk. These are not generally considered to be KRIs, but they are. Good KRIs share these characteristics:

- *Measurable* Ease of obtaining the data, accuracy of the data and reliability of the data are all prerequisites for good indicators;
- *Risk related* (A direct) relation between indicator and risk makes the indicator more relevant;
- *Frequent* An indicator whose value hardly changes is less useful for managing risk on a day to day basis.

Note that none of these characteristics are in themselves sufficient, all three need to be present.

In the OpRisk practice, however, it is not uncommon to find KRIs that hard to measure consistently (e.g. effectiveness of staff training), that bear only an indirect and remote relation to risk (e.g. client satisfaction) or that show only infrequent changes (e.g. staff turnover per year).

The misconceptions concerning KRIs
Many misconceptions regarding KRIs come from the 'early warning' aspect. It has lead some people to believe that a KRI

a) can be analysed on a stand alone basis; and
b) should have an immediate effect on the risk level; and
c) must show a positive correlation to the number of events or the amount of losses.

In fact, none of these assumptions make sense.

KRI misconceptions and solutions

Misconception A: a KRI can be analysed on a stand alone basis
Risk incidents always turn out to have many interacting causes, yet most KRI reports focus on individual KRIs as the sole harbinger of risk. This narrow focus is unproductive. A better approach is to map out the environment that determines the risk, and then investigate what influence this indicator has on the that broader environment. In other words, to develop a model of the specific risk and then determine the role of the indicator. This typically requires time series data on a number of indicators and a model explaining the indicator-risk relation. That may not be the easiest thing to do, but it is what risk management is all about.

Misconception B: a KRI should have an immediate effect on the risk level
It is safe to assume a relation exists between credit worthiness and the employment status of the borrower. But that is not to say that people start to default as soon as they become unemployed. It should, however, be monitored for further deterioration. The number of days in unemployment is therefore a better KRI than the employment status alone, as the effect on the actual level of risk is a delayed effect. A KRI requires extensive time series analysis to build a proper model outlining the relation between the indicator and the risk *level*. Since there will be interdependencies with other indicators, so mere point-in-time observation, will be of little use.

Misconception C: a KRI must show a positive correlation with respect to the number of events or the amount of losses
If an indicator really does function as an early warning signal, allowing us to manage risk, then the KRI and the risk *level* must be correlated but not the number of events or the loss amount. The sensors that beep when you are close to solid objects when reversing your car are excellent KRIs. They signal increased *levels* of risk that allow the driver to take corrective action and prevent accidents. It is a great indicator because breaking the threshold, and hearing even more intense beeps will prevent rather than predict events. Therefore, a good KRI may not translate into an increased number of incidents.

One consequence of these misunderstandings is that banks have been struggling to get their act together on KRIs, attempting to make them do what is either not useful or impossible. Hence, perhaps, the predominance of KRIs that are backward looking (thereby guaranteeing a link to incidents) and that are not used in day-to-day decision making. As has been remarked before, that is like looking only into the rear view mirror when you drive; not the best way to avoid accidents.

Conclusion
KRIs have been on the back burner for many banks for all the wrong reasons. Banks that did start a programme often ended up blindly developing wall-to-wall indicators that are not used. Neither approach is to be recommended. Indicators are the bread and butter of understanding and managing any risk type, be it credit, market, operational or any other kind of risk. Developing indicators is in fact synonymous with developing a risk management approach and OpRisk managers would do well to establish indicators as part of their normal programme.