

Correlation is not Causation



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In risk management, correlation is not causation...

Very often in the field of risk management, risk managers and others who have a role to play in identifying and analysing risk can easily fall into what we call the correlation vs. causation trap. As human beings we are all heavily influenced by our own outlook and perceptions of the world, that is, in itself also influenced by recent experiences.

If you've recently experienced an injury, financial loss, or other event, invariably the human mind then tends to increase its belief that the probability of such experiences is higher, given such experiences. Although this latter phenomenon is called cognitive bias, the relationships between cognitive bias and correlation, itself a correlation, is a trap that risk analyst need to be cautious of.

Because certain things are related does not in itself imply that one is a cause of another. Sometimes it can be, but not always.

A recent project involving cyber security issues experienced by a range of individuals in a large organisation immediately increased my own belief, in analysing this risk, that the organisation's exposure and, in turn, my own exposure to these events was increased. Only after analysing this risk and the actual events that occurred, did it become evident that my belief that the cyber risk was increased, because it has been experienced by a number of individuals of late, and that there was correlation or a direct causal relationship between the events was misplaced.

Bow tie and root cause analysis of each event demonstrated different causal events ranging from poor password protection to an increase in criminality before holiday seasons, that has been evident over a couple of years, to poor hacking awareness from the different individuals and a range of other, un-related causes. Going through such a logical and structured analysis demonstrated that whilst some causation factors (increase in crime before holidays) were correlated to the event, many of the other causes were not.

Dealing with these causes was the way to manage this risk and reduce it. The ultimate outcome was a reduced cyber risk for this organisation, because the original cognitive bias to 'increase the risk' was misplaced. Understanding and dealing with the real underlying causes enabled the analysis to conclude that the risk had actually become lower, after the unfortunate events. Some money was lost, but no one was harmed in the referred incidents.

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