

# Naturalistic Risk Based Decision Making for Risk Management Professionals in the age of COVID-19

By

Jayet Moon, FIIRSM

The author has earned a master's degree in biomedical engineering from Drexel University in Philadelphia and is a Project Management Institute (PMI) Certified Risk Management Professional (PMI-RMP). He is an IIRSM Fellow, an Enterprise Risk Management Certified Professional (ERMCP) and a Risk Management Society (RIMS) certified Risk Management Professional (RIMS-CRMP). The author's new book, 'Foundations of Quality Risk Management' by ASQ Quality Press, WI, USA was released in September 2020.

## Introduction

Have you come across a manager or supervisor or colleague who took decisions which bewildered you? People 'see' data differently, 'process' it differently and adopt different risk attitudes when faced with uncertainty – most of this occurs subconsciously. This article goes into the depths of that decision-making process. Understanding this decision-making process can make a big difference in the quality of your own decisions and help your team and organization to better navigate the uncertainty and volatility created by the pandemic where many high impact decisions are expected under multiple constraints.

Naturalistic Decision Making (NDM) is a framework to study cognitively complex decision making in face of uncertainty in real world situations. Initial NDM precepts were an outcome of extensive research and analysis by U.S. Navy following a 1988 incident where a Ticonderoga-class guided missile cruiser mistakenly shot down a commercial airliner<sup>1</sup>. The incident was a result of flawed risk-based decision making. Army Field Manual on Command and Control (FM 101-5) was updated as a result of this research and now includes elements of NDM as a part of Military Decision Making Process (MDMP)<sup>2</sup>.

Why should risk professionals study decision making? Because we aren't as analytical as we think. Solving problems involves a continual effort on our part to keep the analytical brain running. This becomes especially important when problems are precipitated by large risks, have severe impacts and decisions are expected within short timeframes like those in case of COVID-19.

Analytical thinking is about making close to rational decisions by assessing data and evidence, its quality, relevance and applicability. It is about challenging assumptions and biases to uncover the true issue or roots of an issue. Its about analyzing consequences of each decision path such that the decision in face of uncertainty is the most informed and intelligent. This type of thinking is a deliberative and slow process.

Intuitive thinking, on the other hand, is a fast process where the decision maker makes a 'gut-based' decision informed more by subjective experience and less by situational facts when faced with uncertainty, often driven by situational constraints of time, information and experience.

Daniel Kahneman<sup>3</sup> published a series of articles which revealed that our thinking is not as rational as we previously believed. He proposed two systems of thinking – One and Two. System One, which includes, intuition, hunch and gut feelings is fast, autonomous, subconscious and prone to biases.

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<sup>1</sup> Nemeth, C., & Klein, G. (2010). The naturalistic decision-making perspective. Wiley encyclopedia of operations research and management science.

<sup>2</sup> Ross, K. G., Klein, G. A., Thunholm, P., Schmitt, J. F., & Baxter, H. C. (2004). The recognition-primed decision model. ARMY COMBINED ARMS CENTER FORT LEAVENWORTH KS MILITARY REVIEW.

<sup>3</sup> Kahneman, D. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, 47, 278.

System Two is slow, conscious, effortful and more reliable. Its more deliberate and more logical (rational). No system is right or wrong and both systems have their place.

In System Two thinking, you take time to critically evaluate the risk of the decision in terms of the probability of occurrence of various scenarios and the consequence of these scenarios. It forms the basis of risk intelligent decision making.

As risk management professionals, in general, we are expected to have analytical system two thought processes. But how often do we find ourselves firefighting? Or being the organizational emergency responders? Or high stakes problem investigators and solvers?

If you have found yourself in organizational situations marked by limited time, uncertainty, high stakes, team and organizational constraints, and unstable conditions, then you have and can potentially slip in intuitive System 1 thought process. This can possibly lead to a biased and mis-informed decisions as a result of mis-understood situational context.

### Bias and Heuristics

Bias can potentially be the biggest enemy of risk-based decision making. Bias is defined as a prejudice in favor of or against one thing, person, or group compared with another, usually in a way considered to be unfair. In engineering, bias is defined as a systematic error.

Cognitive bias leads to a deviation from the logical and objective processing of incoming information in face of uncertainty towards a less than rational judgement. It is a subconscious systematic error in decision making which occurs due to subjective processing of information. Bias leads us to under or overestimate risks, omit information and misunderstand data. An anathema for the quality professional.

Heuristics and biases are closely related. Heuristics are subconscious mental connections which allow quick judgement. Paul Slovic, in his 1982 book, *Heuristics and Biases*, goes on to say that a fully rational decision cannot be made due to time and cognitive limitations, instead the human mind, more than often, makes a satisfactory decision rather than an optimal one – this is known as satisficing. This process of making a less than optimal decision by falling a victim to System One thinking processes is based on biases and heuristics.

A naturalistic decision making based on RPD is shown in Fig 1.

As can be seen in the model, available facts are cognitively processed to form risk perception based on situational uncertainty. Based on this subjective perception, a risk attitude is adopted which informs the decision. This process in very fast and catalyzed by biases, heuristics, emotions and assumptions.

This model in Fig. 1 may provide an explanation for Kahneman’s System One fast thinking but does not fully apply to slow System Two thinking. Both types of responses are used in coping with uncertainty depending on constraints of the situation and attitude of the decision maker.

The challenge for risk professionals who are decision makers is to think critically to avoid biased

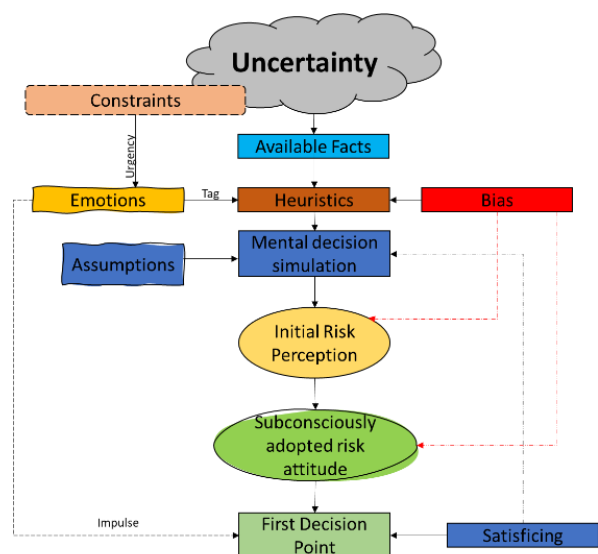


Figure 1: A Naturalistic Decision Making Process based on RPD

intuitive thinking and engender analytical thinking. The key to this is mental self-awareness and adding a delay between stimulus and response to allow System 2 thinking.

This gains special importance when quality professionals are involved in risk management.

All phases of risk management require complex critical thinking and are prone to cognitive fallacies discussed earlier. After risk assessment phase is completed, time comes for making the decision on appropriate risk responses. System One thinking, which is prone to mismatch between reality and its perception, will lead to mistakes early in the risk identification process which may get magnified as the risk management process proceeds and lead to incorrect risk responses.

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*Risk identification errors span organizational hierarchies. Overconfidence is a bias which leads us to overlook risks, or underestimate them. This boils down to incorrect decision of the risk response leading to grave consequences. Another example is gender bias which is often not detected when assessing product design risks.*

*Female drivers were 47% more likely to be injured in a serious car crash because until 2011, vehicular crash protocol used dummies modeled on average male. This led to safety features being structured according to the 50<sup>th</sup> percentile male height, weight and stature including seat belts.*

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Risk based Decision making involves

Situational Risk Management which requires situational awareness and self-awareness.

The conditions in the modern workplace are often not conducive to true analytical thinking and when combined with situational constraints and urgencies within those constraints, analytical thinking can take a back seat.

### **Emotional Intelligence**

Western philosophy on decision making can be traced back to Plato who championed the use of reason and logic. According to Plato, emotions and passions had a deleterious effect on reason. For many hundreds of years this so-called rational model of decision making, based on purely objective generation and choice of alternative decision paths was considered gold-standard in the West. This

illusion was shattered when Tversky and Kahneman<sup>4</sup> experimentally proved that humans were far from objective. If anything, we were continually taking biased decision under the illusion of rationality. Emotional responses to uncertain situations are a gift of evolution; suppression of show of emotions does not mean absence of it. In fact, emotions can play a large role in biased decision making. Emotional Intelligence potentially provides us with the key to leverage and regulate emotions while unlocking the analytical parts of our brains.

We are all familiar with emotions – they are feelings or sentiments which derive from moods, circumstances and relationships. Emotion is not intuition and more importantly emotional is not irrational.

Daniel Goleman<sup>5</sup>, who has authored many works on **emotional intelligence**, defines it as the *capacity for recognizing our own feeling and those of others, for motivating ourselves, and for managing emotions well in both ourselves and others*. Emotional Intelligence, as opposed to inflexible rationalism can be a tool for **leveraging and regulating** the automatic emotional upheaval in face of a challenge for effective decision-making.

All major aspects of the decision-making process can be positively influenced by emotional intelligence. Subconscious bias in form of emotional tags and heuristic patterns automatically contributes to risk perception and is a major part of immediate perception of uncertainty. Here, instead of giving in to ‘instinct’ or ‘hunches’, an emotionally enlightened decision maker would practice certain level of self-awareness, self-management and social awareness behavior. See inset.<sup>6</sup>



#### PILLARS OF EMOTIONAL INTELLIGENCE<sup>1</sup>

##### Self-Awareness

Being mindful of one's emotions – impulsive and non-impulsive. Consciously studying the negative and positive thoughts and their drivers. Understanding the impact of emotions on one's behaviour and decision making thereby knowing one's limitations and strengths.

##### Self-Management

Emotional Self-Control: Keeping disruptive emotions and impulses in check.

Adaptability: Flexibility in handling change. Initiative: Readiness to act on opportunities.

Optimism: Persistence in pursuing goals despite obstacles and setbacks.

##### Social Awareness

Empathy: Sensing others' feelings and perspectives and taking an active interest in their concerns.

Organizational Awareness: Reading a group's emotional currents and power relationships.

Service Orientation: Anticipating, recognizing, and meeting customers' needs.

<sup>4</sup> Kahneman, D., Slovic, S. P., Slovic, P., & Tversky, A. (Eds.). (1982). Judgment under uncertainty: Heuristics and biases. Cambridge university press.

<sup>5</sup> Goleman, D. (2006). Emotional intelligence. Bantam.

<sup>6</sup> Harvard Review Press. (2015). HBR's 10 must reads 2015: The definitive management ideas of the year from Harvard Business Review. Harvard Business Review Press and Goleman, D. (2004). Emotional intelligence and working with emotional intelligence. Bloomsburg Publishing. There are multiple other foundational factors to emotional intelligence than the three listed here. These are most relevant to this article.

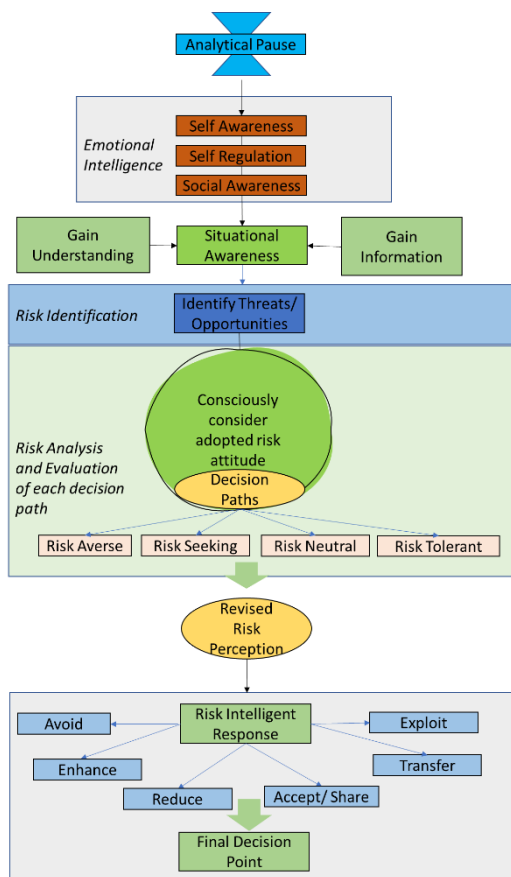


Figure 2: An analytical risk-based decision making process

The aim of risk based thinking is risk intelligent decision making i.e. close to objective decision making based on thorough understanding of context, situation, uncertainty and risks within uncertainty.

The model in Figure 2 which integrates risk and emotional intelligence provides a structure to analyse judgements. After the first pass intuitive process as shown in Fig 1. is finished, the quality professional can take a pause (read analytical pause) and take the following steps to ensure a risk intelligent decision:

1. Take a step back and be aware of any negative and positive emotions generated in one's mind as a result of a new uncertain situation.
2. Regulate impulsive behavior engendered by strong emotions using self-regulation. Identify and challenge any implicit or explicit biases.
3. Social awareness along with self-awareness and self-regulation will help form a situational awareness of the context in which the decision is expected.
4. After the personal part of situational awareness is addressed in 1-3, analyze the situation again and check if more information needs to be solicited to gain a greater understanding of the uncertainty around the decision.
5. Identify threats and opportunities related to the

decision. This is the risk identification phase.

6. Analyze various decision paths and classify them per risk attitudes. Risk attitude is the *approach to assess, and eventually pursue, retain, take, or turn away from risk*. Various risk attitudes are summarized below in Fig. 3.

Risk averse	<ul style="list-style-type: none"> <li>• A decision maker with very low tolerance for high risk taking. There is increased sensitivity and aggressive reaction to threats and a hesitant attitude towards opportunities.</li> </ul>
Risk seeking	<ul style="list-style-type: none"> <li>• A risk-seeking decision maker with very high tolerance for risk taking. There is an aggressive drive to capitalize on opportunities and underreact to threats.</li> </ul>
Risk tolerant	<ul style="list-style-type: none"> <li>• A risk tolerant decision maker becomes inured to routine risks and considers many common operational risks acceptable. Unless an impactful event occurs, there is no change in this attitude. This may lead to underreaction to both threats and opportunities.</li> </ul>
Risk neutral	<ul style="list-style-type: none"> <li>• A risk neutral decision maker has a mature risk attitude, which seeks to consider long-term strategic and operational implications of risk-management decisions. They focus on objective risk benefit analysis as a basis for adoption of risk seeking or risk averse behavior.</li> </ul>

7. Revise your risk perception based on analysis of your and organizations risk attitudes. The less subjective and more informed the risk attitude is, the greater the chance of a risk intelligent decision.
8. Here, sufficient information is present to analytically consider a risk intelligent decision. Risk responses may involve decisions as shown in Fig. 2. It is important to note that decisions

here cover a spectrum from capitalizing (enhance) on an opportunity (risk seeking/ neutral behaviour) to a decision which leads to complete risk avoidance (risk averse behaviour)

W.E Deming, in his work *The New Economics*<sup>7</sup>, highlights the importance of understanding the interaction between the people and the environment they work in. A decision maker must aim to understand this system and the uncertainties within which it operates. One of the most critical and unpredictable yet the fundamental units of organizational systems are its people and their cognitive strengths and weaknesses. Deming's ideas influenced Taiichi Ohno who championed analytical problem solving as part of Toyota Production System. Deming's profound knowledge, for Ohno and Toyota, became the foundation of sound analytical (and where needed, innovative) decision making.

Deming's theory of knowledge stresses on the need for managers to learn psychology of people, psychology of groups, psychology of society and psychology of change. In this vein, this article attempts to provide actionable guidance and a model to assess the intuitive and analytical aspects decision making in real world naturalistic scenarios.

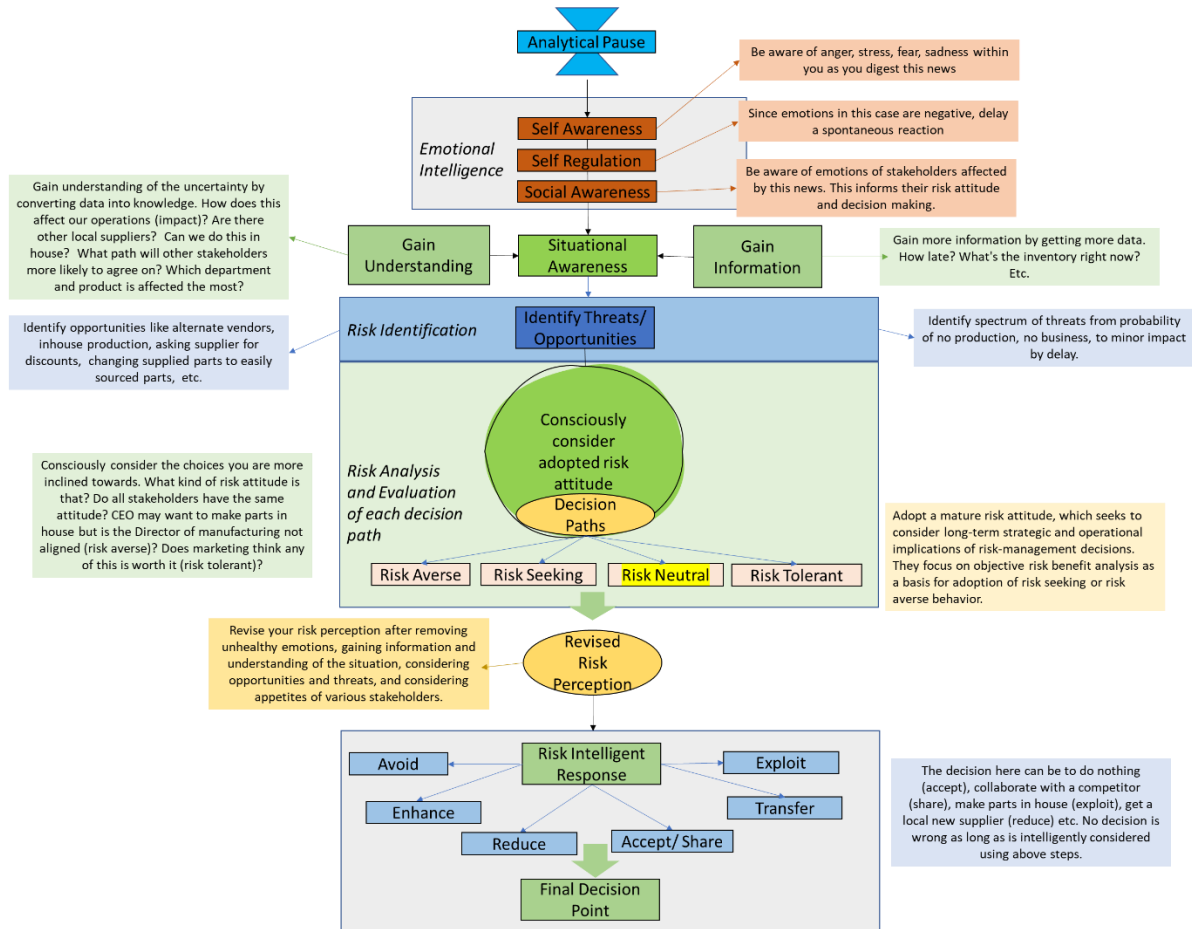
In face of non-standard risks such as COVID-19, where various arms of the organization are exposed to multiple hazards, decision makers have been called upon to take fast risk responses. In this age of omnipresent media, information is continuously being fed into the human brain which shapes System One thought. Decision makers should be very careful in face of an all-encompassing risk like COVID-19 which affects both personal and professional lives where a risk response may be more prone to subjective biases and emotional undercurrents. A risk intelligent decision is the one which is driven by an appropriate risk attitude informed by realistic risk perception which in turn is formulated by emotionally intelligent thought that minimizes bias to most objectively match risk of reality to its mental perception. This will result in a risk response which leads to the minimization of loss and maximization of opportunity.

Fig. 4 Example of a risk-based decision:

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<sup>7</sup> Deming, W. E. (2018). *The new economics for industry, government, education*. MIT press.

**News: COVID-19 leads to overseas supplier missing deliveries**



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